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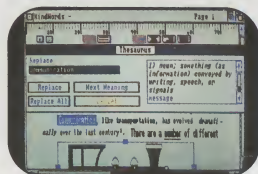
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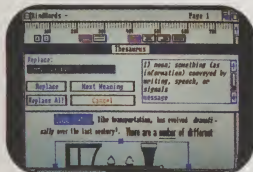
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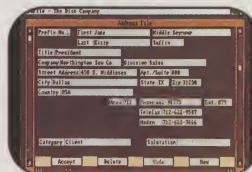
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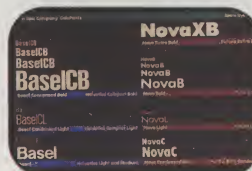
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THE AMIGA DIMENSION

It's Showtime, folks! In Europe, we have three computer shows looming on the near horizon. In Cologne, in West Germany, the first ever AmiExpo this side of the Atlantic is shortly about to take to place. The following weekend, an Italian show - 'Amiga Days' (clearly for Amiga fans who can speak English even if they are in Italy) makes local history.

Precisely the same days, the official U. K. Commodore Show welcomes visitors at its now usual but possibly for the last time venue of the Novotel Hotel in west London. Though there are many who say that in any case it is time to separate the Amiga for a show of its own. In the U.S.A., Commodore has its problems, another was the San Francisco earthquake which 'struck' the AmoExpo held there in California.

These are all Commodore specific shows and, in my view, demonstrate a loyalty that is unequalled toward any other home computer company worldwide.

Commodore, as the year ends, is pushing hard in many countries and almost everywhere, particularly with the Amiga, arousing a very positive response. That affects this magazine and Amiga User International certainly today lives up to its name. We know that our readership is growing globally for the magazine is now on sale in some 27 countries and reaches many more through subscriptions.

One of the things we would like to see happen in the New Year is for readers around the world, and in the UK too, to write with the comments or ideas they want us to pass on to others through the pages of *AUI*, and not just technical queries for Yuri Large. The Amiga dimension unites the interest of people of so many different nationalities and languages. I have found, wherever I go, that being involved with the Amiga is like possessing a passport into many varied areas of activity and a way of meeting a great many friendly and interesting people. I am sure lots of you have had the same experience and we should be glad to hear from you about it.

This month our major feature is also truly international - music. The mass production first of the transistor radio and now of other electronic devices has led to a greater commonality of culture than any language-based activity could ever have achieved.

In almost any country these days, you will hear Madonna, Michael Jackson, Paul Simon or even still the Beatles. Pop music has become universal. The highly professional backing sounds of today's music are usually created electronically with devices whose prices while falling are generally high. We can see in the remarkable products that are emerging for the Amiga that, for such a level of professional sound it is no longer necessary to turn to expensive studio facilities but only to use the Amiga to its fullest talents.

This has been acknowledged by the British Phonograph Institute, the official body of the music industry, in naming the Amiga as official recom-

mended computer, and that is for professionals!

As Paul Andreas Overaa, our resident music expert, who is also a professional musician, points out, for this purpose too it is a very reliable machine. He has used the Amiga for years now as a performance instrument, carrying it from place to place. During that time, in spite of the rough handling and the travelling it has undergone, he has had virtually not a single problem. However, he does advise having it "flight-cased". (In an interesting typographical error in the first proof of his article the typeset words appeared as "fight-cased" making us wonder what kind of audiences Paul generally faces!).

In addition to our major music feature, this *AUI* contains an enlarged Entertainment section. The end of year period sees the games companies pouring out their products in fierce competition and in the belief apparently that all anyone does at this time of year is play games - an idea with which most Amiga users would not, I think, agree.

The Amiga is now dominating the computer games market in the U. K., Germany, Italy, Holland, Belgium and Scandinavia. It is also growing fast in Spain and Holland. In the U.S.A. the Amiga lags behind the PC and the ubiquitous Nintendo. There are now even Nintendo lollipops and breakfast cereals!

I don't believe - or wish - that the Amiga will reach such "success", even though that would certainly please the games companies. For it is a computer not just a toy. However, the growth in the games market is of importance to the Amiga dimension. There are those who will buy Amigas just for games but find it leads them on to further more stimulating and creative areas such as music.

If you are one of our longtime Amiga users - and our recent survey showed that some 90% of you keep your *AUI* "until it falls to pieces" - and who feels that too much attention is being paid to games, write and tell us so. But remember that while you may be an expert - and no doubt welcoming back QUAD, one of our original and popular programming features - everyone has to start somewhere... with music or graphics or even games. As the song says, "It's not where you start, it's where you finish!" And anyway, as I have said before, the Amiga as we know it today may itself just be the start of something much bigger for us all, games players and programmers alike.

Antony Jacobson
Managing Editor and Publisher

Desktop Journalist of the Year!

John Walker, *AUI's* popular longtime writer on the intricacies of DTP, has been honoured by being awarded by the Printing Industry and other official bodies the coveted title of "Desktop Publishing Journalist of the Year" for his articles in *Amiga User International Magazine*. John, who has dominated the Amiga DTP field since it began well deserves the award which was presented at the recent DTP Show. Congratulations, John, and keep up the good work!

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HITACHI'S 256 MEG CHIP

Researchers at Hitachi Ltd.'s Advanced Research Laboratories have developed a prototype of a superconductive chip incorporating 0.1 micron geometries, a capacity in excess of 256 Mbytes and operation at blinding speeds. Such a device would exploit a counter intuitive quantum effect, known as Andreev Reflection, which can occur at the boundary of a semiconductor superconductor junction. Toshkazu Nishino, a researcher at Hitachi, has constructed prototypes based on this principle and expects the chip to be commercialised.

Nishino presented his research recently at the Third International Symposium on Quantum Mechanics hosted by Hitachi and held at the company's Advanced Research Laboratories.

While the work is still in early stages, it should lead to

a so-called superconducting electron wave device somewhere around 2002, predicted Nishino.

In theory, one of the critical structures in an Andreev superconducting electron wave device - the injector, which emits the electrons to be reflected off the superconductor surface - can approach 10 nanometers (0.1 microns) in size. Furthermore, Nishino said, the device may be able to use a single electron to represent 1 bit of information.

"Our goal is to make a superconducting element which is the size of a semiconductor," he said.

Andreev-type chips will contain many such semiconductor elements operating in parallel - Nishino has fabricated a prototype with 72 elements - and will find use in the analog circuits and neural networks of the 21st century.

Action extended warranty

A series of six high quality colour monitors from Taxan is available from Action at substantially below MRP and including Action's extended 24-month warranty.

Typical units from the range include the PC-compatible K14SV765, a 14-in unit designed for the EGA standard, which is offered at £369.00, compared with £499.00 MRP; the K16MV870+, a 16in ultra-high-resolution unit which can be used with systems such as the PC-AT and flicker-fixed Amigas, and is offered at £599.00 (RRP £899.00); and the 20in, 100MHz K20UV1000, the

most powerful of the series, offered at £1897.00 (RRP £2699.00). This is a multi-mode monitor which automatically adjusts to suit a wide variety of high-resolution outputs, and is intended for use in CAD/CAM and other similarly demanding graphics applications.

A range of adaptor cards is available to allow maximum flexibility of operation, all monitors are tested to the highest safety standards.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel: 0800 333 333.

36,000 GATES PER CHIP

Fujitsu Microelectronics Inc. will begin taking orders later this year for a new family of emitter coupled logic gates arrays that offer designers almost 36,000 usable gates on a chip, a record for emitter coupled logic. Individual gate speeds are 80 picoseconds unloaded and 240 ps loaded

with a fanout of three. Total chip power dissipation runs from 15 to 30 watts. The array is housed in a 441-pin ceramic cavityless, surface mount pin grid array package with pre-attached heat sinks. Engineering samples will be available in early 1990.

MicroProse Changes

MicroProse Software Chairman Bill Stealey is claiming that MicroProse is poised for its most aggressive release schedule in its three years of existence and that in spite of a change in management structure at the company.

"MicroProse is set to release 18 major titles, each on several formats before the year end. This year marks a significant evolutionary change, culminating in the acquisition of the Rainbird and Firebird brands and the launch of the MicroStatus and MicroStyle brands. There has also been an increased number of MicroProse Simulation Software titles, including the world famous F-15 Strike Eagle II and M1 Tank Platoon. This activity has enabled MicroProse significantly to increase its share of the European Software market. Our objective is to produce and market high quality entertainment software for the world market," Stealey told **AUI**.

In a change of management structure, MicroProse's formal management board, established over the

last year, will assume full responsibility for all European operations. MicroProse Managing Director, Stewart Bell, decided not to accept a new three year contract, and is now running his own company, Electronic Zoo. "Stewart Bell has done a wonderful job taking the company from start-up to a professionally managed company. He has put in place an excellent management team that can carry on the tradition of MicroProse", says MicroProse Chairman, Major Wild Bill Stealey.

"Stewart is a personal friend, and I wish him every success in his new venture. His decision was primarily based on his own entrepreneurial spirit and his desire to build his own new venture. I know he will do well."

The new MicroProse Management Board consists of Adrian Parr, Finance Director; Peter Jones, Marketing Director; Paul Hibbard, Publisher; John Tweedy, Sales Director and Paul Rowley, Operations Manager. However, it looks like Major Bill will continue for some time in a high profile role in Europe as well as in the U.S.A.

TWO'S A CROWD?

Micro Control Systems, the Nottingham based innovator of PC productivity aids, claims to end the printer war!

It has launched the Simple-2-Switch, a dual mode device that is available in serial or parallel, and allows two users to share the same printer. The company says it is as simple to operate as the standard mechanical T-switch and can be used with laser printers or plotters.

The Micro Control Systems Simple-2-Switch allows manual or automatic switching between users. An indicator light shows which user is connected to the printer.

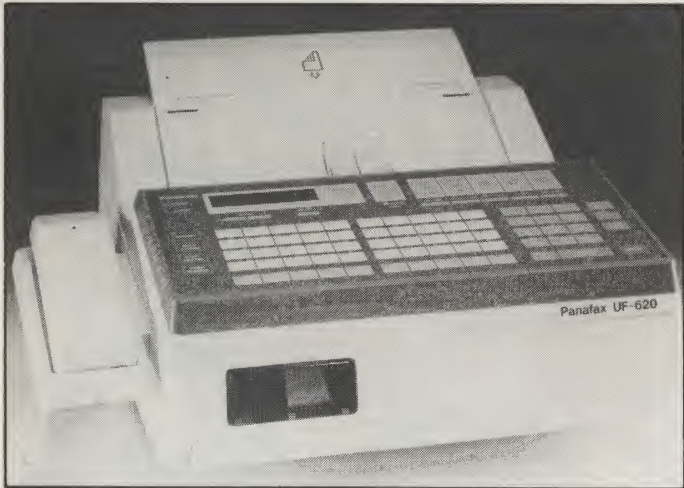
"Not every computer user has a printer and it is frustrating for someone to be kept waiting and wanting.

Our new Simple-2-Switch aims to keep that frustration out of the office environment, so keeping productivity high," explains MCS Director Richard Tavener.

In automatic mode the switch knows when the printer or plotter is free, immediately allowing the second user access. Manually operated, the user has full control by way of a simple switch on the front of the device, just like a standard T-switch.

The Simple-2-Switch has adjustable time out periods of 5, 10, 20, 30 or 40 seconds, and 1, 2 or 5 minutes. This controls how long the automatic switch waits before allowing the other computer to send data.

The Simple-2-Switch costs £79. Contact MCS on 0602 391204.



Panafax UF-620 Fax Machine has 60 page memory

Panasonic have released the Panafax UF-620 facsimile machine, a very high performance unit which has one megabyte of memory - equivalent to about 60 standard document pages - and features a transmission speed of about 11 seconds for an A4 page.

The UF620's very large memory saves operator time, since documents for transmission are rapidly scanned and stored so that the operator does not have to wait until the transmission is finished. The large memory also allows several numbers to be dialled sequentially to send the same material to up to 100 stations, and acts as a buffer so

that incoming calls are stored in memory should the paper have run out.

Available from Action at £1995.00 (RRP £2995.00), the UF-620 offers one touch dialling for up to 40 stations, with dial and redial programmable, plus 60 two-digit abbreviations. Another feature is a coded reception facility, which allows confidential documents to be printed out only when the appropriate passcode is entered.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx HA0 1WL. Tel: 0800 333 333.

SECOND INNINGS FOR GOOCH

Audiogenic Software, publishers of Emlyn Hughes International Soccer, are celebrating the appointment of Graham Gooch as England Team Captain by re-launching Graham Gooch's All Star Cricket, complete with 1989 teams.

Widely acclaimed as an outstanding simulation for the Commodore 64, Graham Gooch's All Star Cricket is, so Audiogenic cornily claim, "packed with enough features to bowl any maiden over!"

Features include dropped catches, wides, bouncers and full tosses - even the occasional 'retired hurt'! Scorecards are displayed at the end of every over, there are messages that scroll across the screen when a player or partnership reaches 50 or 100, plus realistic sound effects and superb digitised speech. There is even a practice mode in which you can brush up your batting and bowling - and action replays after the fall of a wicket so

FIVE PCs INTO ONE LASERJET

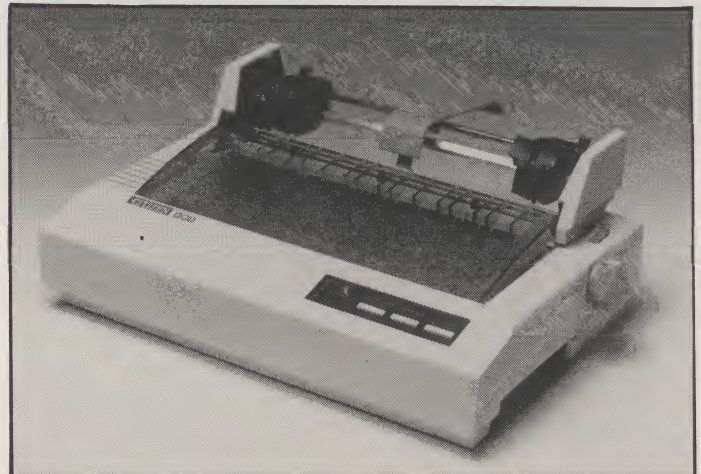
A buffered printer sharing device which allows up to five PCs to share the printing capabilities of a single HP laserjet II printer, the UK's biggest selling laser printer, has been launched by Auric International.

PCs are connected to the four serial ports provided by the device via compact RJ-11 modular telephone-style connectors, allowing quick installation of low-cost four wire cable. The high speed parallel input port actually accepts data from the PC at

a significantly higher speed than the standard LaserJet II parallel port, and at more than eight times the rate of competitive serial port only designs. EZQ Laser II's parallel port appears suitable for sending lengthy desk-top publishing or complex graphics files to the printer.

Contact: Auric International Ltd., Milton House, Milton Road, Wokingham, Berks RG11 1DE. Tel: (0734) 772734.

500,000 CITIZEN 120Ds



The success of Citizen's 9-pin workhorse, the 120D dot matrix computer printer, has taken it into its fourth year of production with sales of half a million units. With improvements to the 120D, Citizen predict that the printer's popularity will continue well into the 90's.

Citizen have given the printer a newly designed tractor feed which will improve paper handling to produce sharper print and greaphics quality. The new

design incorporates one sturdier paper guide (instead of the previous two) and an adapted pressure leaf which also provides a better hold on paper during printing. Citizen have extended the platen lines by two centimetres which allows the printer to accept every European standard paper size. Recommended retail price £199 including interface.

Contact Citizen on (0895) 7261.

that you can see just where you went wrong!

Built into the game are players and averages for England, Australia, West Indies, Pakistan, India, Sri Lanka and New Zealand - plus a World XI and an All-Time XI.

In their PR mode, Audiogenic boast that Graham Gooch's All Star Cricket is "a

real catch for all cricket fans" and provides the enthusiast with a real chance to beat the West Indies, which could be more than England will ever do! If anybody wants to play cricket after the last dismal season, this might just be an acceptable way to do it! Available now on Commodore 64, £9.95 tape or £12.95 disk.

Photofile DTP

Photofile has recently expanded its service to sell public domain and its own Clip Art for incorporating into DTP and Art packages. On offer is a set of seven disks of Mono Clip Art for use on the Amiga. The complete seven disk set is available solely from Photofile for £35. None of this Clip Art has been seen on the Amiga before, the company claim. Contact: Photofile, PO Box 196, Nottingham NG2 4GQ. Tel: (0602) 261498.



Amiga Gift Collection

The Disc Company has announced the release of the Amiga Gift Collection package for the Amiga 500.

The package is composed of the following: Who! What! When! Where!, Appointment book, scheduler, Calender, To Do List, Alarm Clock and Address Book. The All-in-One Solution for organising daily activities.

Phasar 3.0, Home Financial Management. Phasar allows the home user to conveniently and efficiently manage financial affairs. The program keeps track of income and expenses and has up-to-the-minute reports generated which gives the user detailed status of the financial condition. **MasterType**, The best selling typing tutor. MasterType is a comprehensive, self-paced typing program

offering a useful and entertaining way to master typing. **F40 Pursuit**, from Titus. Best selling action packed arcade race simulation. **Hole in One Miniature Golf**, Interactive and multiple player miniature golf with three separate courses. Realistic sounds and graphics. Amiga compatible joystick.

"The packaging is a luxury gift wrap style and thus it is a perfect Christmas present for the Amiga enthusiast", explains Howard Marks, Managing Director of The Disc Company. "This is the first ever high quality Christmas gift package for the Amiga market."

The Amiga Gift Collection is available now through TDC's United Kingdom network of distributors for a suggested retail price of £79.95 including VAT.

The Missing Link

POS-BOX, developed by Derbyshire based Format PC, is a unique interface device for anyone who wants to add bar code reading, magnetic stripe reading and an output device driver to a computer terminal. (Surely that's what you have always wanted to do, isn't it?)

Format have also introduced POS-Card, an interface board that fits directly into a short slot on any IBM compatible PC.

Add a wand, laser scanner or magnetic stripe reader and you are ready to go.

No need to change your software - all data input from either POS-Box or POS-Card appears just as if it were keyed in through the keyboard.

POS-Box was recently selected by a multi-chain furniture store for connecting bar code readers onto their networked DEC VAX system operating throughout the UK.

Contact: Format pc Ltd, Goods Road, Belper, Derbyshire DE5 1UU. Telephone 0773 820011.

HEARME.DOC

If you are involved in any way in the development of new software packages, then you should take a look at the innovative AMT Speech Development System (SDS). The SDS is in effect a tool for incorporating high quality speech into both new and existing software. It allows large recordings in relation to the amount of memory needed. By compressing the speech through special software techniques, the AMT recording requires only 1% of the memory used by a normal digital recording. A single 360K diskette can be used to hold up to 24 minutes of clearly spoken guidance, instructions and prompts. This amounts to a compression rate of 1% and a data rate of just 2 kilobits per second.

Drivers are available which allow messages recorded on the SDS to be

used within almost any programming environment. Moreover, speech files which follow on from one another are retrieved in background mode, so your user is never kept waiting.

Using software prepared with SDS is easy, says AMT. The operator only needs to fit a simple half-sized add-in card into his IBM compatible, or to plug in AMT's external play back unit into his parallel printer port.

Further applications range beyond talking software and CBT when the compressed speech is stored on PROMs or EPROMs. Applications extend into warning systems, aids for the blind and partially sighted, public information systems, control and instrumentation, etc.

The AMT SDS costs £3,000. Contact AMT on 01 450 3222.

POOL OF RADIANCE ON AMIGA

Shock Horror Story - Yes it's true, over one year after the launch of this highly successful product, SSI have finally added the Amiga version to their schedule. Sales to date on C64 disk and PC are approaching 200,000 worldwide. The release of the new format should see sales through the quarter

million barrier.

U.S. Gold (even the wonderfully indiscreet Danielle) refuse to be specific about the dates, but if you want the latest info try calling Bob Malin at U.S. Gold on 021 625 3388.

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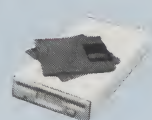


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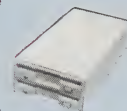


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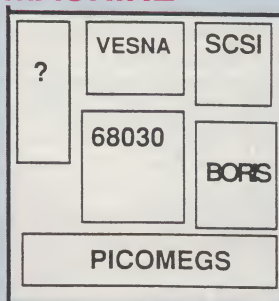
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*** JUMPDISK ** JUMPDISK ** JUMPDISK ** JUMPDISK ***



WE'RE PACKED AGAIN!

Contents of this issue filled two disks to start. We crunched, we packed, we tightened, we honed. And now it fits on one disk. You'll find more usable material on this disk than you thought possible.

**** EDUCATION/UTILITIES ****

The theme for the November issue is Education and useful Utilities. **PRESIDENTS:** Learn about the 41 Presidents of the USA and associated historical events. **LOGICLAB:** Exercises in Logic Circuits. **MYSTERY DIVISION:** Learn long division the easy way. **LETTERSAY:** Teaches young children the alphabet. **SHOWIZ 2.0:** Turn your art text & sound into slideshows the easy way. **FULLVIEW:** Full width text reader that handles regular or compressed text. **BBINSTALL:** Learn all about Bootblocks and how to customise them. **BIGBENCH:** Increases usable height of screen. **LITTLE BLACK BOOK:** The latest version of this excellent database for names, addresses, Xmas lists etc., **PLUS:** Games, Mews and much more. **** FREE WITH THE NOVEMBER ISSUE OF JUMPDISK – THE JUMPDISK PROGRAM DIRECTORY WITH THE NEW WORKBENCH V1.32 ON A SINGLE DISK! ** ALL FOR JUST £8.50 inc (£6.99 Members)**

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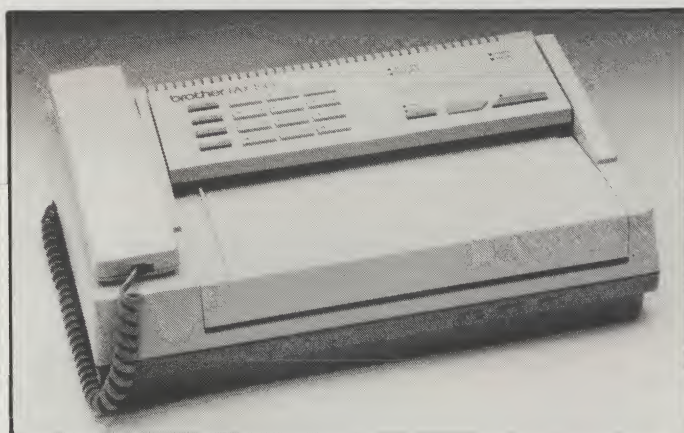
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Teletitler is a software package made specifically for mixing video productions and computer titling. Marcam Productions claim that the Teletitler is capable of presenting information in shops with display windows, in nightclubs, hotels and supermarkets.

Marcam tell us that it is possible to create detailed training films, wedding

videos and can assist in training the deaf in the use of sign language.

Teletitler offers 4,096 colours, horizontal, vertical and diagonal scrolling a large choice of fonts and fade in, fade out effects. It is compatible with the Amiga 500 and 2000. Contact: Marcam Ltd., 62 Tenter Road, Northampton. Tel: (0604) 790466. Price £199.00



BROTHER'S FAX 150

The Brother Fax 150 desk top facsimile machine is now available at £497.00, including delivery, installation, and 24 month warranty. Unusual for a machine at this price, it provides 16 shades of grey scale, allowing transmission and reception of high-definition graphics.

It has an integral telephone handset, and single-button dialling for up to 20 num-

bers. The Brother Fax 150 has a transmission speed of 4800/2400 bps, and offers a range of standard facilities such as security password and auto answer switches, last number re-dial and tone or pulse dialling.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel: 0800 333 333.

Momentum Mail

Micro Momentum has released a mailing list management program called Momentum Mail. Its features include: file size limited only by disk capacity; entirely menu driven with keyboard equivalents for ease of use; pre-set fields configured for a mailing list; and a search function that allows multiple criteria and full pattern matching.

Price: \$29.95 (US). Contact: Micro Momentum, Inc. 100 Brown Avenue,

Johnston, RI 02919. Tel: (401) 949-5310.

Thin Drives

Citizen Europe has introduced what they claim to be the thinnest 3½in floppy drive. Aimed at applications in the portable and desktop the UODC and UODD drives measure 19.5mm in height and are 100mm wide and 130mm long. They both offer 1Mbyte of unformatted storage each.

Optical Disks

Optical storage media will form a \$4.8 billion market in the US by 1993, according to a recent report from Frost & Sullivan. Several years ago an optical disk boom was forecast to occur by 1990, but this has now been delayed to 1993 or beyond.

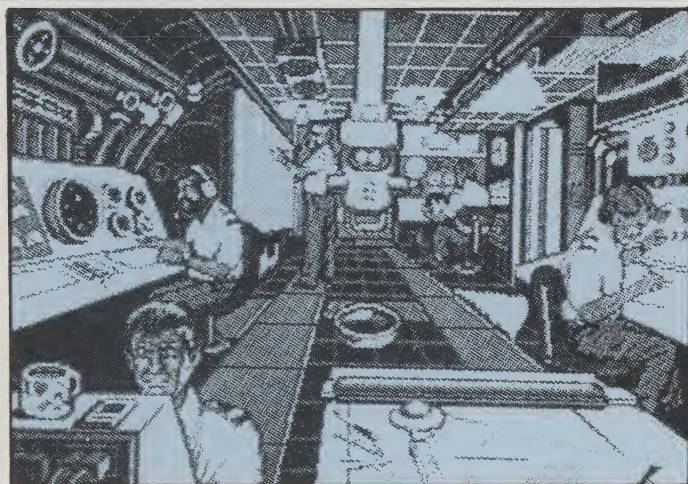
Optical disks have vast amounts of memory — some have storage capacities up to 1,000 times those of conventional floppy disks. And the price per unit is set to decrease over the next few years.

Frost & Sullivan predict that by 1993 the volume of sales of optical disks will

be more than four times higher than the total for 1989. It is also expected that optical disk technology will have reached a penetration level of 18 percent of the installed base of PCs. And although WORM (Write Once, Read Many) systems are currently dominant in the optical market, erasable systems will be the most popular type by 1993 (see table below).

US Optical disk market (\$ billion)

	1989	1993
ERASABLE	140	2,200
CD-ROM	193	454
WORM	605	1,400



AMIGA ATTACK SUB!!

Following the success of '688 Attack Sub' on the PC, Electronic Arts have decided to release the game for the Amiga.

'Attack Sub' allows the player to take control of a nuclear submarine on a selection of different tasks and missions.

An Electronic Arts spokesperson told AUI "The

positive that 688 received in the computer press helped us in our decision to make the game available for Amiga users."

One feature of this submarine simulator that might appear on the Amiga version is the use of spoken commands given by the sub's crew to the player! The game is released in the new year.

Format Executive

Financial Systems Software has announced the UK release of Format Executive for the Commodore 128 with a 1571 disk drive and 128D.

Format Executive allows 128/64 files to be transferred to and from the Commodore Amiga, Atari ST and Apple Macintosh.

Also, files can be transferred to or from, 150 different 3.5" and 5.25" disk formats with ASCII and PETASCII translations.

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Tel: (0386) 553153.

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QUAD - Quick and Dirty

Hitting the Hardware

Giulio Zicchi was one of the original contributors to the early issues of AUI. He was even the very first reviewer to write about the legendary Defender of the Crown on this side of the Atlantic.

QUAD, Quick and Dirty, his series of useful and simple programming tricks was one of the most popular items in those early days.

Now, Giulio Zicchi spends most of his time and programming talents creating games - The Kristal was one of his recent hits. We have, nevertheless, persuaded him to give readers the benefit of his acknowledged expertise and resume his Quad series. This will be welcomed by the many AUI readers who have told us how well they were liked.

This series of Quick And Dirty articles is aimed at the Amiga programmer who, through the use of 68000 assembly language, wishes to 'hit the hardware'.

This seems to be quite a contentious subject as far as the purists are concerned, the general consensus being one of "Use the System!". However, the plain truth of the matter is that, to write a successful arcade game, you really need to 'junk' the entire O/S and treat the Amiga as a large chunk of RAM with some rather special custom chips attached.

That said, these articles will be 'system-friendly', using Library calls in places to set things up and to facilitate the painless return to the CLI, from which they must be called.

The following example shows how to access the blitter directly in order to blit a 32*16*3 BOB to a 320*200*3 screen. This would normally be done by setting up a number of system structures and then making the relevant calls to the Graphics Library. The method presented here is much more direct although it does have some disadvantages compared to the 'legal' way i.e BOB priority and pixel clipping have to be handled by the programmer.

The blitter uses up to four DMA channels, three source and one destination. Using a combination of these channels, it can move data around in (chip) memory at amazing speed. It is also capable of performing one of 256 logical operations on the source data as it is being moved as well as pixel shifting it, this being necessary as the blitter is a word blitter and not a pixel blitter.

Setting up the blitter is a relatively straightforward matter as you will see from the accompanying source code listing. The necessary steps are as follows:-

Set the appropriate BLTxPT registers for the channels you wish to en-

able (where x = A,B,C,D).

Set the BLTxMOD channels where applicable.

Set the shift, channel select and minterm (more about this in a moment) in BLTCON0 and BLTCON1.

Set the mask value you require in BLTAFWM and BLTALWM.

Set the size of the blit in BLTSIZE - access to this register actually triggers the blitter.

The minterm as mentioned above is the number which controls the logical operation to be performed on the data as it is being moved. For a more detailed explanation, you should refer to the Hardware Reference Manual but for now, we need a minterm of \$CA which says to the blitter, "Get channel A data, AND it with channel B data, OR this with channel C data and then place the result at the channel D address". This applies where A is the mask of the BOB (the logical OR of all planes), channel B is the actual BOB data, channel D is the screen destination as is channel C.

BLTSIZE is the register which controls the size of the blit as well as triggering the blitter chip. The upper ten bits represent the number of lines to blit and the lower six bits represent the number of horizontal words. We actually need to move three words even though the BOB image in this example is only two words wide. This is because the blitter needs space to move the pixel shifted data into when placing data on pixel boundaries. The BLTALWM value ensures that no spurious data is present and the A,B modulus of -1 step the pointers back one word after data fetch is complete, since the BOB image and mask is linear.

This example should clear up a few of the mysteries surrounding the blitter chip and spur you on to experiment further.

The program was written using HiSoft's Devpac Amiga, version 2.

continued on page 16

continued from page 14

opt c--,d+

incdir dh0:include/ change 'dh0:' to your own include dir
include exec/exec_lib.i
include exec/memory.i
include hardware/custom.i

; Some Defines for this program

CUSTOM equ \$DFF000 base of Custom chips

SCREEN_WIDTH equ 40 40 bytes = 320 pixels
SCREEN_HEIGHT equ 200 200 lines
SCREEN_DEPTH equ 3 3 planes

SCREEN_PLANE equ SCREEN_WIDTH*SCREEN_HEIGHT
SCREEN_SIZE equ SCREEN_PLANE*SCREEN_DEPTH

BOB_WIDTH equ 4 byte width of Blitter Object
BOB_HEIGHT equ 16 pixel height of Blitter Object
BOB_DEPTH equ 3 number of planes of image

BOB_PLANE equ BOB_WIDTH*BOB_HEIGHT

BLITSIZE equ 6 BYTE width of blit

lea GfxLib(pc),a1 library to open
moveq #00,d0 any version
Callexec OpenLibrary perform open
move.l d0,_GfxBase store pointer
beq Nolib_exit null pointer = no library

move.l #SCREEN_SIZE,d0 byte size
move.l #MEMF_CHIP+MEMF_CLEAR,d1 memtype
Callexec AllocMem
move.l d0,MemBase store pointer
beq Nomem_exit exit if we didn't get it
lea Cop_Planes,a0 ptr to plane ptrs in coplist
moveq #SCREEN_DEPTH-1,d1 numplanes-1 for dbra

Insert_Planes
move.w d0,6(a0) insert low word of address
swap d0 swap for high
move.w d0,2(a0) insert high word of address
swap d0 revert
add.l #SCREEN_PLANE,d0 add size of one plane
lea 8(a0),a0 bump pointer
dbra d1,Insert_Planes for all planes
move.l _GfxBase,a0 library base
move.l 50(a0),OldCop store system copper list
move.l #NewCop,50(a0) insert our copper list
bsr Blit_Bob

Wait
btst #6,\$bfe001 wait for left mouse button
bne Wait
move.l _GfxBase,a0 get library base
move.l OldCop,50(a0) restore old copper

DeAlloc
move.l MemBase,a1 de-allocate memory
move.l #SCREEN_SIZE,d0
Callexec FreeMem

Nomem_exit
move.l _GfxBase,a1 close graphics library
Callexec CloseLibrary

Nolib_exit
rts exit to CLI

; Set Parameters for Blitter Stuff routine

Blit_Bob
lea Bob_Mask,a0
lea Bob_Data,a1
move.l MemBase,a2 Destination
add.l #(SCREEN_WIDTH*100)+18,a2 offset to midscreen
move.l a2,a3 BltDpt same as BltCpt
moveq #-1,d0 note negative modulus for A,B

move.l #((SCREEN_WIDTH-BLITSIZE)<<16)+SCREEN_WIDTH-BLITSIZE,d1

move.l #0FCA0000,d2 select channels/minterm
move.l #((BOB_HEIGHT<<6)+BLITSIZE/2),d3 height + WORD width
move.l #FFFF0000,d4 masks
moveq #SCREEN_DEPTH-1,d7 number of planes

lea CUSTOM,a6 base of custom chips

bb_loop
bsr Stuff_Blitter set and trigger
lea BOB_PLANE(a1),a1 offset to next plane of data
lea SCREEN_PLANE(a2),a2 offset to next plane of screen
move.l a2,a3 copy C to D
dbra d7,bb_loop for all planes
rts done....

; Setup Blitter Chip

STUFF_BLITTER

wfblit1
btst #6,dmaconr(a6) monitor 'blitter finished'
bne.s wfblit1
move.l a0,bltapt(a6) ok - now hit registers
move.l a1,bltbpt(a6)
move.l a2,bltcpt(a6)
move.l a3,bltdpt(a6)
move.w d0,bltbmod(a6)
swap d0
move.w d0,bltamod(a6)
move.w d1,bltdmod(a6)
swap d1
move.w d1,bltcmmod(a6)
move.l d2,bltcon0(a6)
move.l d4,bltafwm(a6)
move.w d3,bltsize(a6)
swap d0
swap d1
rts

Gfxlib dc.b "graphics.library",0
even
_GfxBase dc.l 0

MemBase dc.l 0

OldCop dc.l 0

SECTION ChipStuff,DATA_C

Bob_Data
DC.W \$0000,\$0000,\$0000,\$0000,\$0E00,\$0080,\$0840,\$0080
DC.W \$0840,\$0080,\$00C3,\$8020,\$0E02,\$10E4,\$0842,\$1084
DC.W \$0842,\$1084,\$00C0,\$300C,\$3F83,\$E0F8,\$0000,\$0000
DC.W \$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000
DC.W \$0000,\$0000,\$0000,\$0000,\$0E00,\$0080,\$0E40,\$00C0
DC.W \$0C60,\$0080,\$00E3,\$8020,\$0E63,\$90E4,\$0E43,\$18E6
DC.W \$0C63,\$18C6,\$00E0,\$380E,\$3FE3,\$F8FE,\$1FC1,\$F07C
DC.W \$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000
DC.W \$0000,\$0000,\$7F00,\$0700,\$3180,\$0300,\$3180,\$0300
DC.W \$3187,\$C370,\$3F0C,\$63D8,\$318C,\$6318,\$318C,\$6318
DC.W \$318C,\$6318,\$7F07,\$C1F0,\$0000,\$0000,\$0000,\$0000
DC.W \$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000

Bob_Mask
DC.W \$0000,\$0000,\$7F00,\$0700,\$3F80,\$0380,\$3FC0,\$03C0
DC.W \$3DE7,\$C3F0,\$3FEF,\$E3F8,\$3FEF,\$F3FC,\$3FCF,\$7BFE
DC.W \$3DEF,\$7BDE,\$7FE7,\$F9FE,\$3FE3,\$F8FE,\$1FC1,\$F07C
DC.W \$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000,\$0000

NewCop
dc.w \$0100,\$3200,\$0102,\$0000,\$0104,\$0024
dc.w \$0108,\$0000,\$010A,\$0000
dc.w \$0092,\$0038,\$0094,\$00D0
dc.w \$008E,\$2C81,\$0090,\$F4C0

Cop_Planes
dc.w \$00E0,\$0000,\$00E2,\$0000
dc.w \$00E4,\$0000,\$00E6,\$0000
dc.w \$00E8,\$0000,\$00EA,\$0000
dc.w \$0092,\$003A,\$0094,\$00CE
dc.w \$008E,\$2C81,\$0090,\$F4C0
dc.w \$0180,\$0000,\$0182,\$00EA
dc.w \$0184,\$0600,\$0186,\$0A33
dc.w \$0188,\$0EAA,\$018A,\$0004
dc.w \$018C,\$004B,\$018E,\$0FEF
dc.w \$FFFF,\$FFFE

JForth Professional 2.0

Some 'sneaky programming' earns Andy Eskelson's approval with an unusual language

Forth is one of the most unusual computer languages that you will come across for any machine. It is small, VERY fast, and generally portable. This means that it is possible to write code that will run on more than one machine with little or no modification. This is very dependent on the machine specific functions that a program might use. (it would be pointless to call multi-tasking functions that the Amiga has built into it, on an Atari ST it just would not work!) Forth is doubly unusual in that it is almost a total user supported language, and as such it has developed surprisingly well. Since Charles Moore developed the language the various user and interest groups have produced a couple of very well defined standards and the Forth language is based on these standards. The first standard that was widely used was the 79 standard. This has now been superseded by the 83 standard, which contains many more

definitions of how the system should operate, and also many new features.

JForth Professional is a rather special version of Forth. This system compiles directly to 68000 machine code, thus the need for an interpreter is dispensed, and Delta Research claim that JForth will run 2 or 3 times faster than traditional Forths.

What you get with JForth is:

Forth 83 standard, Floating point support, FFP and IEEE double, Local Variables, Precompiled Modules for Include Files, 32 bit stack, 32 and 64 bit operators, Hashed directory, Disassembler + RPN and Motorola Assemblers, 68000 exceptions trapped, Object-Oriented Dialect, ODE included, and many utilities such as sort, String manipulation, File I/O etc.

In the Amiga environment you can call any Amiga subroutine by name, you are provided with a full set of include files, simplified interface to Graphics

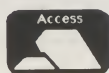
and menus, you can also reference structures with size checking a la 'C' also provided is an IFF toolbox.

JForth is provided with an 'extensive manual with tutorial for beginners' source level debugger with single step and breakpoint capability. You can use normal text or the traditional Forth Block/Screen editing system, a command line history similar to the shell has been implemented, as have user assignable function keys.

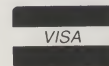
I am going to look forward to seeing the full JForth package, especially if the Demo disk is anything to go by. The code is compact and FAST. Due to some very sneaky programming the mandelbrot plotter is the fastest one that I have seen! This system shows more promise than any other that I have examined to date, so I hope that the full package will live up to the demo programs.

A.E.

Price: \$180.00. Contact: Delta Research, P.O. Box 1051, San Rafael, CA 94915. Tel:(USA) (415) 485-6867



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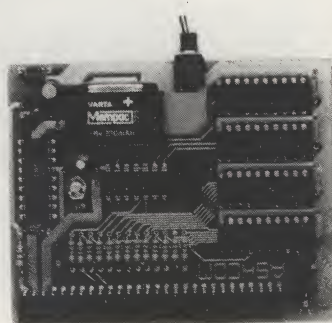
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Amiga Graphics

"With the season of goodwill in mind, it would seem appropriate to have a run-down of some art packages which have made the Amiga the best present you ever had. Perhaps the generosity will spread deeply enough for someone to consider buying you one of the top drawing programs."

BRUSH UP YOUR AMIGA ART

But first, a few basics about the Amiga's amazing graphics. All art packages mentioned here are controlled by the mouse which, like a brush, is used to draw with colour on screen. The number of colours, and the definition of the image are directly related to the Amiga's display modes. You may have a palette of 2, 4, 8, 16, 32, 64 or 4096 colours on screen at any one time.

Low resolution has 320 pixels across, and 256 deep on our European PAL display. Angled lines tend to exhibit the jaggies in this mode - a stepped appearance like a saw-tooth.

The way to improve the definition of the image is to increase the number of points (or pixels) on screen. The Amiga's high resolution mode with interlace can determine 640 x 512 pixels in standard display mode (more in overscan, when no borders are evident), though the number of colours available drops to just 16.

Interlace mode, which doubles the vertical resolution, is excellent for taking photographs off-screen, and recording from the computer on to videotape, but can cause severe eye strain unless a high-persistence monitor or flicker-fixer is used.

HAM mode is unique to the Amiga, and allows the computer's full palette of 4096 colours on screen at once. This is paid for in terms of display constraints, which include colour fringing. Colour digitisers can use this mode to great effect.

Overscan is another option which can be selected for artwork, though this really is only useful for video recording your screens, as it fills slightly more than the entire screen area, leaving no unusable borders, as happens with standard modes.

Art packages take full advantage of the windows, icons and pull-down menus environment of the Amiga, with mouse control a fluid aid to some powerful tools. Keyboard shortcuts are generally available to save time in accessing menus, but almost everything you need to get the most out of a package is available without having to take your hand off the mouse.

One thing Amiga owners can be eternally grateful for is the IFF standard; this is the usual method of storing art screens to disk, and means that images created in one package are compatible with every other (excepting of course those images created in modes not supported by a rival piece of software - you cannot load HAM images from, say, Digipaint III into DeluxePaint III, but you CAN transfer images the other way (Deluxe to Digi).





Here in my view, are the best draws of '89.

Electronic Arts' **DELUXE PAINT III**

Something of a brand leader as far as Amiga art packages go. From its first incarnation at the birth of the A1000 through a major upgrade, and now at version 3, in 1989 one of the most powerful art packages available on any machine.

DPaint is the kind of program into which novices and professionals alike can immediately and safely dive. Excluding HAM, it can work in any of the Amiga's resolutions, including the very useful 64-colour halfbrite display, interlace and overscan. This creates a variety of canvasses on which to let your imagination blossom.

Major features, apart from a delightful ease of use and impressive speed,



are the mode controls to govern paint display, animation, fills and brush articulation. Images may be smoothed through anti-aliasing techniques, blended to merge one set of colours with another, smeared and shaded. Portions of the screen can be tinted different hues, and graduated fills are easy and effectively handled.

A portion of the screen can be clipped as either a regular or irregular shape and used as a straightforward brush to paint anywhere on screen, or used as the basis for a fill pattern which will work either over the entire screen, or in a pre-defined bounded area.

Once captured a brush can be rotated, bent and generally manipulated in 3D space to achieve some quite stunning special effects.

Colours can be defined, and ranges selected; these ranges then can form the basis of fills, or cycled automatically either as you draw or on a complete

screen.

Animation is the major addition to the new version of DPaint, and as well as being a useful tool, is a lot of fun. Quick results can be had with a little effort, and animation movies can be saved for later playback.

Brushes can be made to spin in 3D



space, and in a little time complex scenes can be built up, though you will need plenty of memory to get the most out of this feature. Disk space will also be at a premium for serious users.

Price: £79.95

VERDICT: The best there is.

Newtek's **DIGIPAIN III**

This is to HAM what DPaint is to all the other resolutions. Finely-tuned from its first impressive version, the new program gives outstanding control of the tricky 4096 colour mode.

There has only been one previous version of DigiPaint, (the III part of the name looks like a good piece of marketing strategy - it keeps up with DPaint, and leapfrogs Photon Paint) and the





1989 software is a hundredfold better.

Any IFF image can be loaded in, then translated into HAM mode for further work. I routinely create an image in DeluxePaint, then port it over to get at all the goodies this program offers.

Tool operation is very similar to DeluxePaint, though the modes of brush manipulation are in a class of their own. Brushes can be overlaid in varying degrees of saturation - ghostly overlays and transparent glass or bubbles are a doddle, and two dimensional surface mapping well implemented.

Actually creating artwork is rather harder than a standard 32/64 colour



package due largely to the HAM mode's idiosyncrasies. These include some complex rules about the colour of adjacent pixels, which can be tiresome. But it is something you learn to live with - if not exactly something you end up loving.

The program features a vast palette choice, and enables you to select a range for subtle shading.

Price: £69.95

VERDICT: *Excellent for enhancing existing images, full control over display special effects, a mite off-putting for quick-draw artists.*

Microillusion's PHOTON PAINT II

Another HAM drawing package, but



with the added attraction of animation facilities. You may consider these a luxury, but they are a good selling point, using the simple flip-screen technique.

Photon Paint's more outstanding features are brush manipulation - an interesting surface mapping ability which just pips DigiPaint, though the latter does adopt a more friendly approach to the user. Brushes can be mapped onto true 3D surfaces, and there is an intriguing option which allows you to add



depth to a flat brush. Colourising (adding tints to existing images) and brush overlaying is performed effortlessly. There is also a shadow feature, which will give your painting a sense of depth when objects are meant to overlay each other.

Price: £89.95

VERDICT: *Clever, feature-packed package. Still not easy to create artwork from scratch. Animation might be the deciding factor, but DigiPaint holds the edge for me.*

PIXMATE

Not a paint program itself, but deserving a place in your collection because of its usefulness. It allows you to load in images, then globally alter them. For example, a colour picture can be rendered into black and white.



Brightness, colour saturation and mode are all transferable (you can convert, say, a HAM image into a 64-colour one for importing into DeluxePaintIII. Images can be processed in a number of startling ways - some of which are not too useful, it has to be said - but the filtering techniques help massage often noisy digitised images in a pleasing way.

The number of colours can be cut, with the program trying to work out the best combination; this is handy when

trying to conserve memory, because the greater the number of colours (and bitplanes used to display them), the more memory is needed.

Price: £49.95

VERDICT: *Non-essential, but a valuable adjunct to your range of software.*

Electronic Arts' DELUXE PHOTOLAB

Unique, as far as I know, in being able to work in ALL the Amiga's resolutions (the usual modes plus HAM). The down side is that it is not really bristling with special effects.

It is a good investment as a standard art tool with some nice brush effects, and has the added bonus of being accompanied by two other program - one which converts images from one mode to another, and generally allows you to tailor the display to your own



requirements, and a poster printer.

The print program is a very attractive feature, enabling you to print out vast pictures from your art screens; it does this jigsaw fashion, by creating a grid over the picture, then printing it out a square at a time so you can stick it together later. Seeing yourself lifesize from a digitised image can be an eye-opener!

Price: £69.95

VERDICT: *Unspectacular but worthy art package with useful additional programs. Good value for money, and a solid tool.*

Whichever of these you choose - or whichever combination of them some kind giver provides, they offer outstanding value both from the viewpoint of price and enjoyment. In cost, they are, for the facilities they offer, unrivalled on any other computer and they offer the opportunity to be creative, to see something up there on the Amiga screen that is truly your own, that would not have existed if the combination of Amiga and you had not come together. Now that's the best present that anyone could give us, isn't it?

P.L.

Contact: Chips Computer Shop, 151-153 Linthorpe Road, Middlesbrough TS1 4AG. Tel:(0642) 219139.

AMIGA MAKING MARVELLOUS MUSIC



*This month **AUI** brings you a magical music special! From MIDI software to sound digitisers, it's all here. Just in time for Christmas, these pages show how you and your Amiga can produce superb sounds, regardless of your expertise.*

So... whether novice or pro, get those fingers in action and start making that marvellous music.



Small Wonder!

Mark Smiddy, in his own little way, enters the resonant world of digital sound...

Generally speaking, where computer hardware is concerned, you do not get an awful lot for your money. As the physical size of recent hardware has diminished the price has actually increased. It seems the precedent set by Sinclair in the late 70's and early 80's has been all but forgotten.

Well almost, because the subject of this review is a piece of hardware which - although performing at least as well as its nearest competitor - sells for almost

half the price. Not only that, Omega Projects' Sound Trap is so small you could fit it inside a cigarette packet. So what is it? A fast, audio based 8 bit analogue-to-digital converter - a sound sampler to the rest of us.

You could reasonably argue, a sound sampler is a sound sampler and what is so wonderful about this particular one? Where Sound Trap scores over the competition, apart from the obvious price advantage, is in its unique design

since it makes use of the latest idea in casings - the size and shape of a gender bender. Not only that, but the same device can be fitted to ALL Amiga variants and still provides a printer pass-thru.

Marvellous as this sounds, I should point out that the printer cannot be operated at the same time as the sampler - the results are well, different, to say the least. The sampler and printer share the same port, i.e. the same I/O lines. So, when the sampler attempts to send information to the Amiga, the printer will also receive the signals and

continued on page 22

continued from page 21

attempt to print them. Even though a printer cannot read 40,000 bytes per second, the results are still potentially disastrous.

As things turn out, it is unlikely this will ever prove much of a problem in practice, since Omega Projects have thoughtfully included an ON/OFF switch. This does not cut the sampler's power (a messy solution anyway) rather it tells the sampler's electronics to make themselves electrically invisible. It may prove necessary to switch some printers on (and off-line) to stop their input electronics interfering with the sampler. This caveat only applies to a few printers (especially some lasers) and may require some trial and error.

According to Omega Projects, there is another problem with Sound Trap - which only applies to the A500 and is due to a design anomaly in the machine! Power for the sampler at 5V is taken directly from the Amiga's parallel port. The problem is this: Commodore's documentation states this output delivers 5V at 100mA which is perfectly adequate for driving the sampler. What CBM do not admit to is a current limiting resistor in the line. This resistor is supposed to protect the Amiga in case of overload - Omega Projects would argue otherwise.

The upshot of all this shows up when

load is applied to the line and the output voltage drops dramatically - to under 4V in some cases! Because the sampler requires a measly 70mA at 5V (70% of rated supply current) some units will not work. For the same reason, the sampler does not feature a power indicator. Since the average red LED requires around 20mA to work, it will cause the line voltage to drop too low. Needless to say, all Sound Traps are thoroughly tested before leaving the factory so this problem should not affect end users.

The real proof of the hardware lies in the software - or at least in the quality of the results. This sadly, is where the current release of the Sound Trap system falls down. Instead of the usual system of menus, the author has opted for using a point and shoot control panel. While this is fine once you get used to it, initially it does seem very strange. Worse still, the file selector leaves a lot to be desired.

Cavils aside though, there is no denying the software works. Sampling rates are adjustable from around 6KHz through to around a memory gobbling 34KHz - higher rates are promised later. I mention the problem with memory, since the current release cannot make the best use of available memory on 1Mb machines. This is more a fault of Exec (part of Kickstart) than the prog-

ram but it is a problem I would like to see corrected.

Nevertheless, if you happen to have a copy of the excellent Audiomaster (an official copy that is) you will be home and dry since the Sound Trap hardware is fully compatible. In any case, the supplied software can save .IFF SMUS files suitable for inclusion in Sonix and similar packages. This is just as well, since the player supplied as part of the software causes the machine to "hang" while samples are being played.

Overall, I found the Sound Trap to be simply elegant, or should that be elegantly simple? Either way, it manages to embrace the essence of true high technology and low cost. As such it is a worthy addition to any Amiga system - especially if music is your forte. The software may not be anything to write home about - but it works, and free updates are promised, soon. If there is one area I cannot find fault with, it is the accessories. Sound Trap comes with a lead suitable for a portable cassette player, and a miniature screwdriver to adjust the input level and for any other requirements. The whole thing is very highly recommended.

M.S.

Price: £37.50. Contact: Bytes and Pieces, 37 Cecil Street, Lytham, Lancs FY8 5NN Tel:(0860) 254344.

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Adept's Real Time Sound Processor

The Real-Time Sound Processor (which I will shorten from now on to 'RTSP') is another offering from Adept Development. It is a combined hardware/software package which uses a digitizer to steal audio sounds whilst the software uses the digitized sound to produce various digital effects, sending the original signal plus the modified signal back out to the Amiga's audio chips in real-time, i.e. as you play!

The RTSP comes supplied on a single disk (dongle protected) together with a manual which can, in all fairness, only be described as 'barely adequate'. Without dwelling on it too much I suspect that translation difficulties are the main problem and unfortunately the result is that the manual contains such wonderful phrases as 'The superimposition of waves leads to series of phenomena characteristic of that which it known as interference' - not bad eh! There is quite a few other shortcomings as well, e.g. the RTSP has Play/Edit modes which are selected alternately by pressing the right mouse button - this is not made particularly clear in the text.

So what about the program itself? Edit mode allows you to adjust the effects parameters.... sampling period, amplitude and frequency modulation, and the waveforms (sinewave, square-wave and rising/falling sawtooth) used for AM and FM signals. The period settings govern the signal quality and here best results are obtained using low numerical values. Reverb and echo parameters... time duration, feedback, volume, left/right delay are all adjustable and, as is now usual with Amiga music programs, it is also possible to turn off the Amiga's anti-aliasing filter.

The editing arrangements are poor... you cannot enter values directly so you are stuck with number gadgets which cycle as you click on them.. This has to be done manually, i.e. the prog-

ram has no auto-repeat cycling to speed things up.... there is no excuse for this sort of interface on a machine like the Amiga and I found it irritating and very reminiscent of the Amiga's early software.

The RTSP package can hold 128 different effects in memory and can save/recall them from disk. It can select memory resident effects via MIDI Program Change commands and will operate either in OMNI or channel selective modes. The effect-selection via MIDI works fine so, if you are using the RTSP in conjunction with a sequencer or master keyboard, you will be able to select effects settings by remote MIDI control!

At times there is the usual 'digital hiss' on the digitized signal but no more than that found on some other Amiga digitizers. I think you have to keep things

in perspective a bit here.... I even get some digital noise on my MXR Pitch Transposer (not as much as with the RTSP digitizer though!) and when I bought that it cost around £1500. The final quality obtained with the RTSP depends very much on both on the type of signal, and its original quality.

I was very pleased with the results obtained using a Telecaster guitar (via a mixing desk) - some of the flanging/chorus type effects that can be achieved are very good indeed. The results that a couple of Roland synths provided (being output from the same desk) were however, disappointing.

RTSP is not going to be a package for the professional (nor is it meant to be) but there is no doubt that under the right conditions it can be made to produce some very effective sounds. I found that the best idea is to mix the signal externally, so that you add anything that the RTSP/Amiga produces to an existing signal that is coming from whatever you are digitizing.

Nowadays very few musicians play without some types of effects. The music industry is flooded with real-time sound effects processors but many of these rely on the delay/modification of the audio signal, rather than true digital sampling. You can get budget priced foot-pedal echo and distortion units, there are a mass of second hand budget priced rack-mounted units (like the Boss CE-300 Super Stereo Chorus) available if you hunt around, and of course there is a fair number of new 16 bit digital effects units appearing. Real-Time sample based digital sound processing is the 'in-thing' at the moment so an Amiga package like the Real Time Sound Processor is a really nice idea.

P.A.O.

Adept's Real-Time Signal Processor costs £99.95 (inc VAT) and this includes both the software and the digitizer. Contact: H.B. Marketing. Tel: (0895) 444433.



Music X's File Structure

Music X is one of the most exciting music packages for the Amiga. Paul Andreas Overaa offers some tips on making it give its best.

For those of you who didn't realize it Music X, the new Amiga sequencer, stores its data in IFF form. It does however use private chunks for most of its data because many of Music X's data requirements would be inappropriate for other sequencers. What's important though is the fact that the format has been disclosed right from the day the package was released, so 3rd party software-suppliers and Amiga users who would like to write their own programs for reading and editing Music X data-files can get all of the necessary information very easily. Music X uses 14 different IFF chunks to represent various data items so, for those of you who fancy looking at some Music X data files, here is the run-down on the chunk layouts which you will come across...

AUTH

This is a simple ASCII text string of 30 characters or less.

NAME

Another simple text string chunk

TSIG

This chunk deals with time signatures and adopts the following arrangement..... 2 bytes of beats per bar, 2 bytes of beat size where 0 = a whole note, 1 = half note, 2 = a quarter note etc.

TMPO

The tempo of a piece of music is held in four bytes measuring the number of quarter notes per minute.

CUES

Six cue points each containing 2 bytes of cue measure number (bar zero is the start) and 2 bytes of the MIDI clock count within the cue bar.

SEQU

Sequence chunks adopt this arrangement...

4 bytes of sequence number

30 bytes of sequence name

1 byte of start mode (0=off, 1=self starting)

1 byte of clock mode (0=relative time,

1=absolute time)

1 byte of output bank (0=MIDI port output, 1=Amiga chips)

1 byte reserved

2 bytes of starting measure (signed word with zero origin) After that comes the event list, using 10 bytes per event

ORM LIBR

An LIBH chunk is the library header and it consists of 32 bytes of library name, 32 bytes of protocol name, two bytes of name offset, 2 bytes of name length and 4 reserved bytes followed by the protocol strings in count-data type format. The library entries themselves use LENT chunks which have a 30 byte name field, 1 reserved byte, 1 byte for a channel number, 1 byte for a program number, 1 byte reserved and 34 bytes of SYSTEX data.

FORM 8SVX

This is the standard IFF sample form.

KMAP

Keymap data has a 2 byte keymap number field followed by 564 bytes of keymap tables. Table formats use 3 arrays of 128 bytes each - the first array holds the MIDI command for each key, the second holds the first MIDI data byte for each key, and the third holds the second data byte for each key.

OUTC

Output channels are identified using 16 bytes, one for each MIDI channel.

FILT

Filter tables are used to re-map the channel data of incoming messages. It's one of Music X's most powerful features and the chunks are stored with this arrangement...

4 bytes of filter number

1 byte indicating the channel mode (0=No thru, 1= Re-out, 2=internal)

1 byte of keymap number (0= no keymap in use)

1 byte reserved for control map (not currently used)

1 byte of channel after-touch fraction

1 byte of PitchWheel fraction

8 bytes of input channel table

The upper four bits of the MIDI status byte, i.e. the bits which identify the message type, are used as an index into the table. The entry simply replaces the original status byte and, since it replaces the whole of the status byte, it also allows the channel number to be remapped as well !

SYNC

Synchronization settings are stored in the following manner...

1 byte of relative sync type (0 = internal, 1=MIDI, 2=derive from Abs. clk.) 1 byte of absolute sync type (0=video, 1=MTC, 2=SMPTE, 3=derive from Abs. Clk.)

1 byte of output sync enable (0=No MIDI sync out, 1=MIDI sync out)

1 byte of system start mode (0=Send start/stop, 1=receive start/stop, 2=ignore start/stop)

TCDD

SMPTE time code settings use six bytes... 2 bytes of SMPTE rate (0=non-drop frame, 1=25FPS, 2=24 FPS, 3=Drop Frame) and 4 bytes of the timecode offset (in quarter frames).

AUDI

Audio filter settings use two bytes with zero implying the filter is OFF !

Music X's Events

Event lists are stored using ten byte units. 3 bytes are used for the start time, 1 byte for the command, space for 2 data bytes, 3 bytes holding the stop time of the event and then we get another byte assigned for a 'third' data byte..... now I wonder how that situation arose?

The event types and data items for the events are as follows...

Relative start and stop times use 12 bits to identify the measure number, and 12 bits to identify the clock ticks within the bar. Absolute sequences use the full 24 bits to state the quarter frame number. So that, in a nutshell, is what you find when you look inside a Music X file. It's early days yet but we are bound to see lots of public domain and new commercial offerings taking advantage of the 'open-ness' of Music X's filing system. So..... if you fancy making a lot of money all you have to do is identify a potential gap in Music X's 'add-on software' market!

P.A.O.



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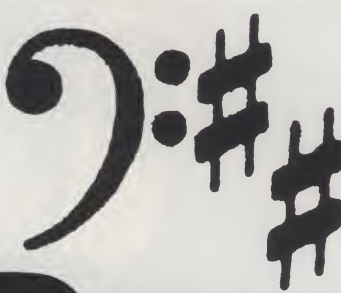
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Master Tracks Pro Sequencer



Paul Andreas Overaa examines a heavyweight Amiga sequencer

As you could tell by recent *AUI's* the Amiga is finally beginning to move into the serious MIDI user market. A year ago Dr. T's KCS was the only Amiga sequencer worth even considering by serious users. The KCS is still one of the best sequencers available (and rumour has it that there are some new enhancements to come) but over the last couple of month's Music X has arrived, Steinburg's Amiga 24000 is getting closer and now Passport Designs Inc., have released their heavyweight Amiga sequencer - the Master Tracks Pro package.

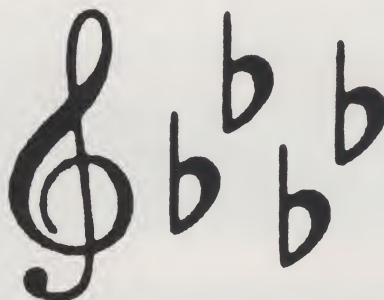
The Master Tracks Pro sequencer is a 64 track sequencer which is also available on other machines. The Amiga version has been ported by Kyle Granger and does, incidentally, needs 1 megabyte to run.

Because of the wide range of facilities which Master Tracks Pro offers it is difficult to cover all aspects of the program in a single review. This being so I have opted for a mixed approach.... a brief excursion to give you a feel for the package together with more detail in the odd areas where I think it has been worthwhile to dig deeper.

The record/play facilities revolve around a 'transport' window. It is the display equivalent of a tape recorder with play, record, fast forward, rewind, pause, and stop controls together with clock/time/measure indicators and a set of gadgets for selecting punch-in/punch-out, count-in, metronome, auto-rewind, MIDI thru activation, first-keypress start and external sync options. The transport window counters

tell you whereabouts you are in a sequence. Internally the package uses 240 ticks per quarter note and you can move with that resolution to any point in the sequence simply by clicking on one of these fields and typing an appropriate value. All of the transport window controls are easy to use.

Details of sequences are shown in a separate window known as the track sheet. This provides details of the track



name and number, play, record, solo, and on/off mute status together with channel number, initial program change and loop control details. The channel assignment field is a sort of 'global re-mapping' control - you can record all MIDI data on all channels on any given track but setting a value in the channel assignment field allows you to over-ride the stored channel data and force playback on a single selected channel.

A special multi-track mode allows a similar re-mapping to be done during input, i.e. you can force particular tracks to listen to specific MIDI channels. When you are dumping data from other sequencers and want to split up the data as it is received, or if you are

recording in MONO mode, this facility becomes very useful indeed.

When you re-record over part of an existing track only the data in the area you re-record over is changed - all other data in that track remains unchanged. All tracks can be independently looped and tracks can be moved around simply by clicking on the track number and dragging the track to a new location.

Master Tracks Pro editing facilities are quite sophisticated with editing options available at several levels: The song editor allows you to edit large blocks of music at once time. Working with groups of measures you can move sections of music within a sequence or build new sequences from segments of other sequences. Like the Track Sheet window the Song editor is a table of tracks in which each track is listed on a separate row - but instead of alphanumeric information, the Song editor provides a graphic representation of the musical data present in the track. It works in one-measure blocks with a measure ruler along the top of the window. Any measure with MIDI data gets displayed as a solid black box. Editing areas can be marked out with the mouse and modified using the edit menu commands which we shall describe later. A detailed 'Step Editor' is also available and here a variety of tools are provided which let you input and edit notes either individually or in small groups. It is here that you get detailed control over the events present in a single track and the facilities include zoom control, playback scrolling, regional editing, pitch and time indicators,

continued on page 48

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PREVIEW

"Real Things" Animation

An interesting animation package is soon to be released for the Amiga. "Real Things", produced by RGB Studios, animation works on the principle of the sequencing of living things.

Robin Bilson of RGB was irritated by the prevalence of shoot 'em up and horror games in children's entertainment. RGB initiated a creative, self controlling and flexible program which is designed to encourage imaginative thinking.

All that is required for running the "Real Things" program is an Amiga 500, Deluxe Paint III, and a desire to let your imagination run free. Many people are frustrated by their inability to produce life-like designs using paint packages because they seem to require a substantial artistic ability. "Real Things" overcomes this drawback by placing interactive graphics in the hands of the user.

The program operates on 3 main principles:

Reality, User control, Sequencing. Artists have been employed to capture the essence of movement in a few simple frames; thereafter the package runs like computerised painting by numbers.

Deluxe Paint III allows the greatest paint realism at the quickest speed and greatest economy of memory. Photon Paint is slower to load and is also greedy on memory.

RT has an index in each of DP III's loading windows, thus making access fairly straightforward. The program loads "into the hand" directly; the still picture instantly becomes a tool for animation purposes which is immediately under mouse control. This clearly shows the user that any animation is made up of several stills. The user control of the still also means that the size and colour can be easily altered; this in turn makes the material active and not just a static picture. However, one word of warning, the graphics do require 1 Mega byte of memory so be sure to clear the memory before commencing the program.

The ANIMBRUSH is used to create



the sequencing of the animation. This brush is also mouse-controlled and therefore creates a "living" picture. The animbrush will move both forwards and backwards and colours can be easily changed; however, it is useful to keep the palette (i.e. the number of colours) down in order to economise on memory.

As long as the sequence is kept fairly simple, i.e. within 40 or 50 frames, the program can easily be run on 1 Meg of memory.

The advanced animations on the program demonstrate the possible applications to which the animbrushes can be applied. Once the characters exist they are highly flexible and can be used to create your own story. The construction utilises a scrolling background for realism and also teaches the user the value of the move requester. The viewers' eyes determine layers of distance by parallax; by using a distance count the program creates a real feeling of depth.

The makers are anxious to stress the educational applications of the "Real

Things" animation package; however they are equally concerned to ensure that the product is viewed as entertainment.

It has a useful application for teaching children details of nature, anatomy, perspective, as well as enhancing their observation, and making the process of learning one of enjoyment. Indeed the possibilities of this versatile program are virtually endless. The flexibility, adaptability and user control of "Real Things" certainly make it an exciting development in the world of computer graphics. It is equally gratifying to find something entertaining carrying educational value.

The program will come complete with manual, user guide, and subject folio. Retailing at £24.95, it seems likely to be real value for money entertainment. The package we saw was still at the developmental stage, and RGB have stressed that feedback would be appreciated.

Contact: RGB Studios on 082-581 2666. Distributed by DigiPro on 0703-703030.

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MIDI - Gadgets, Glitches and Gremlins...

Paul Andreas Overaa offers some ready made solutions to nasty things that make your Amiga go bang in the night...

With the recent arrival of Micro-Illusion's Music X, Steinburg's Amiga 24000 (based on the Pro-24), Passport's Master Track's Pro, and the existing range of DrT's software which includes the KCS package, there is no doubt that sequencing on the Amiga has finally come of age. That means that Amiga owners no longer need to be left out of the MIDI revolution

that has taken the music world by storm over the last few years. The Amiga, a MIDI interface, a sequencer package and a synthesizer are all you need to get started and whether you are a complete amateur or a fully fledged professional musician there is no doubt at all that MIDI will enable you to make music that not so many years ago could only have been made by users with Rick Wake-

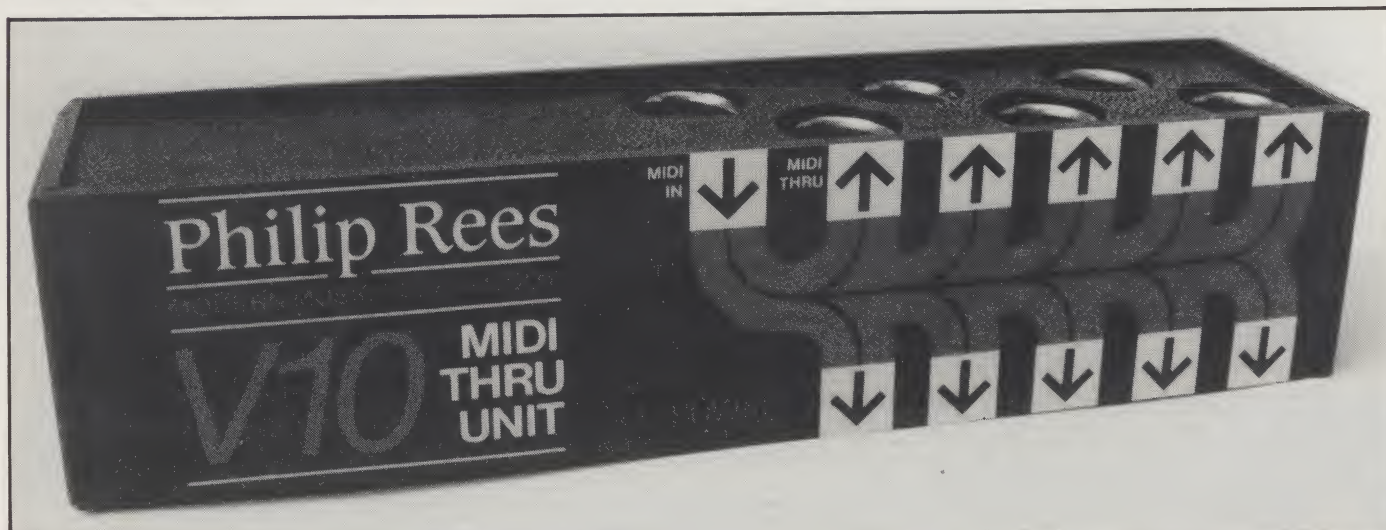
man type wallets. MIDI has made it possible to cheaply connect vast numbers of different units synthesizers, drum units, expander modules, even MIDI controlled mixers, amplifiers and effects units - all controlled by a computer. Once a musician realizes the potential that MIDI offers it is tempting to add more and more units, so often what starts out as a fairly simple MIDI set-up becomes more like a MIDI-controlled studio.

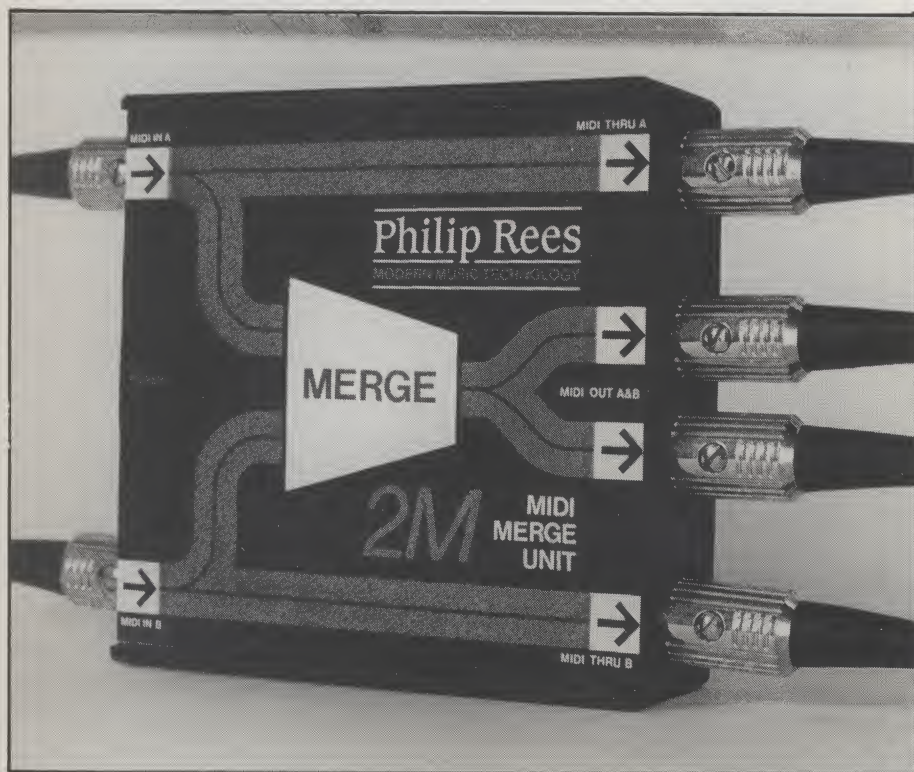
MIDI problems are actually few and far between but occasionally glitches and gremlins will get into your system. When they do it is either due to the physical set-up (bad or poor connections etc.), or it's connected with the options which have been selected for particular MIDI units. There are some standard solutions available nowadays which are well worth knowing about!

When you have only have one or two pieces of equipment, linking them up is easy - you just chain the devices together using the MIDI THRU terminals. In actual fact the number of units that can be connected together in this fashion depends on what music you are playing. At times when a lot of data is going down the MIDI lines, e.g. when lots of pitchbending is being done or

when you are using a keyboard with true polyphonic aftertouch, then you could hit problems with as little as 3 units chained together.

What happens is that each time the MIDI signal passes through a unit a slight deterioration in signal quality, and a small time delay occurs. Sooner or later problems, such as notes getting stuck or unrecognisable messages appearing etc., start to occur. The way to avoid these difficulties is simple - instead of chaining MIDI units together, you create an arrangement known as a 'star network'. All this means is that you feed the output of the MIDI interface into





a box which provides 2,3,5 or perhaps as many as 10 separate MIDI OUT terminals. The result is that the MIDI messages travel to each unit along a short direct path instead of a long chain, so the delays and signal degradation problems disappear. Unless you pay an awful lot of money for a sophisticated MIDI interface, your sequencer output appears at a single MIDI OUT, not a collection of MIDI OUT's, so you need to get hold of a device known as a MIDI THRU Box.

The most comprehensive range of these magic conversion boxes available at the present time come from a Company called Phillip Rees. The smallest device, the V3, provides three MIDI OUT terminals, it is called the V3 and is battery driven, and at the top of the range comes the V10 unit which contains its own built in transformer/power supply and drives 10 MIDI OUT terminals.

As your MIDI set up grows you will find MIDI THRU Boxes very useful indeed..... basically you plug them in and forget about them and for most users a single unit instantly solves all of their signal degradation connection problems. The V3 by the way costs £12.95, and the larger V10 unit £35.95.

Phillip Rees also market a range of MIDI merge-boxes. These are very useful in situations where you need to route multiple MIDI keyboards to the same expander modules and they are often needed with some of the new MIDI software that's arriving on the MIDI scene (namely software which supports multiple sets of 16 MIDI channels - to use it properly, especially with a large

star network based MIDI set-up, you need THRU boxes which have multiple MIDI IN terminals). One of the latest Phillip Rees products is a clever little box which lets you do just that. It is called the W5 Dual Input Box and it allows you to route two separate MIDI data streams to any one of five outputs. The W5 unit costs £49.95 ! There is a growing range of Phillip Rees products available THRU boxes, merging units, routing switches, and even things like MIDI/CV converter units which let you control old analogue synthesizers and CV samplers via MIDI.

Barring the nowadays easily solved connection problems, MIDI is relatively trouble free. Occasionally though, the odd problem does arise and since you cannot actually see digital signals it is not always easy to find out why ! For the average computer enthusiast it is quite feasible to write a suite of programs for fault finding purposes, so you would imagine that this would be a nice cheap and effective solution to the problem. In actual fact nothing could be further from the truth - usually when you need to check something your sequencer will be running and you will probably want your MIDI set-up to retain its normal configuration whilst you some rapid fault finding. If you want to use you Amiga to fault find, you will not be able to have the sequencer running at the same time - so, unless you have a second Amiga lying around spare, you can guess how much use your utility programs will be when problems occur !

Studiomaster have solved this particular difficulty by bringing out an absolutely brilliant little device called the

MA36 MIDI Analyser. It can be either battery or mains-adaptor powered and has two MIDI sockets, namely MIDI IN and MIDI THRU. The MA36 reads MIDI messages which pass through it, and displays the details using a front-panel led display. The only control on the MA36 is a power on/off switch, and to use it you just plug it into a MIDI line and look at the display - it is simple and very effective.

On the right hand side of the MA36 display there's a bank of channel indicators - these let you see which MIDI channels are being used. As MIDI messages are received by the unit the left hand side of the display bursts into life identifying details of the messages as they are received.

The transmission of all of the usual note-on/note-off messages, real polyphonic aftertouch, control change messages and program change messages can all be easily identified - if for instance a MIDI unit is not responding to program change messages then there can only be three possible causes - either the unit transmitting the messages is not, or the unit receiving them is not, or the channel number is incorrect. Plug the MA36 into the sending unit and you will see straightaway what messages are being sent and on what channel ! Plug it into the MIDI thru of the receiving unit and you will see what messages the second unit is actually receiving.

All notes off, song select, song pointer, tune request, channel pressure, pitch wheel, SYSTEX/SYSTEX END and all of the real-time messages (start, stop, continue, active sensing, system reset and timing clock data) are catered for. You want to find out whether your mother keyboard is sending clock data ? You will get the answer in as many seconds as it takes you to plug in the MA36 unit. The MA36 does for MIDI message problems what Phillip Rees boxes do for connection difficulties - they let you solve problems quickly and easily ! It is not just useful for MIDI users either - if you are writing Amiga MIDI software yourself then the MA36 will let you test your transmission routines etc., very easily indeed. Sure you can get software to do the same job, but the MA36 is cheap, portable, very easy to use and it does not tie up your Amiga, so you can fault-find a MIDI set up whilst it's running ! The MA36 MIDI Analyser costs £49.95 and is one of the best MIDI gadgets to appear to date. Studiomas-ter are already well known for their mixing desks, and the MA36 will certainly do their reputation no harm at all. AMP Audio Systems are handling the mail-order side of things for the MA36, but you can of course contact Studiomas-ter directly.

For semi-pro and pro musicians the temptation to use an Amiga 'live', i.e. on stage, comes very high on their list of

USER PORT

priorities. The Amiga running programs like Dr. T's KCS will beat most dedicated sequencers hands down but lugging your Amiga around to gigs is not something to be done without preparation. I learnt about this the hard way because one night I knocked the RS232/MIDI switch off of my A2000's built in MIDI interface - I still remember frantically unscrewing the Amiga's case, by-passing the switch and promising myself that the Amiga would be flight-cased before the next gig! I have used Amigas on live gigs for a couple of years now and only once (when the boot-up drive failed) have I had any problems.

If you are contemplating a mobile Amiga sequencer system then there are three important things to remember: Firstly DON'T go for a hard disk system - they are still not safe enough to go on the road with. Secondly, always carry back-up copies of all programs and data disks you need. Thirdly, get your Amiga and the VDU flight-cased before you start shifting it around - the people to contact are ABS Cases, they are specialists in custom flight-cases and they have a lot of experience in dealing with the special problems which computer equipment presents.

P.A.O.

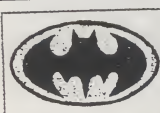
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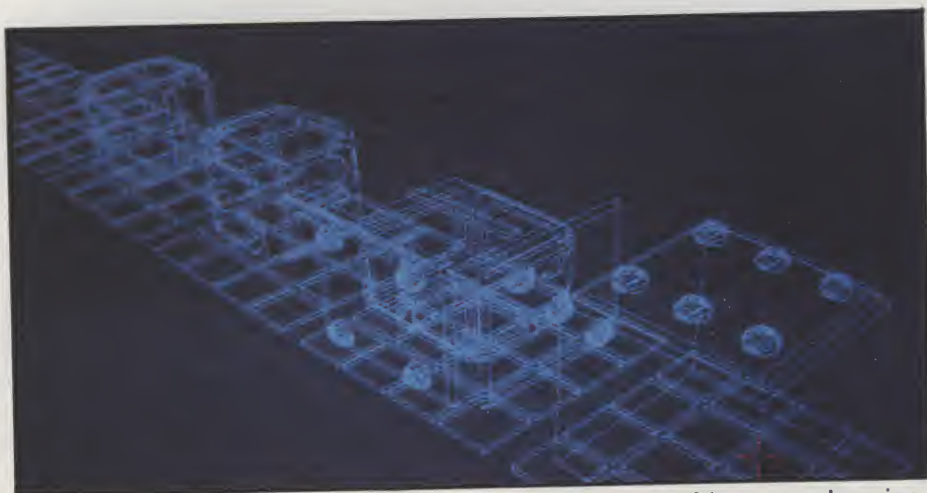
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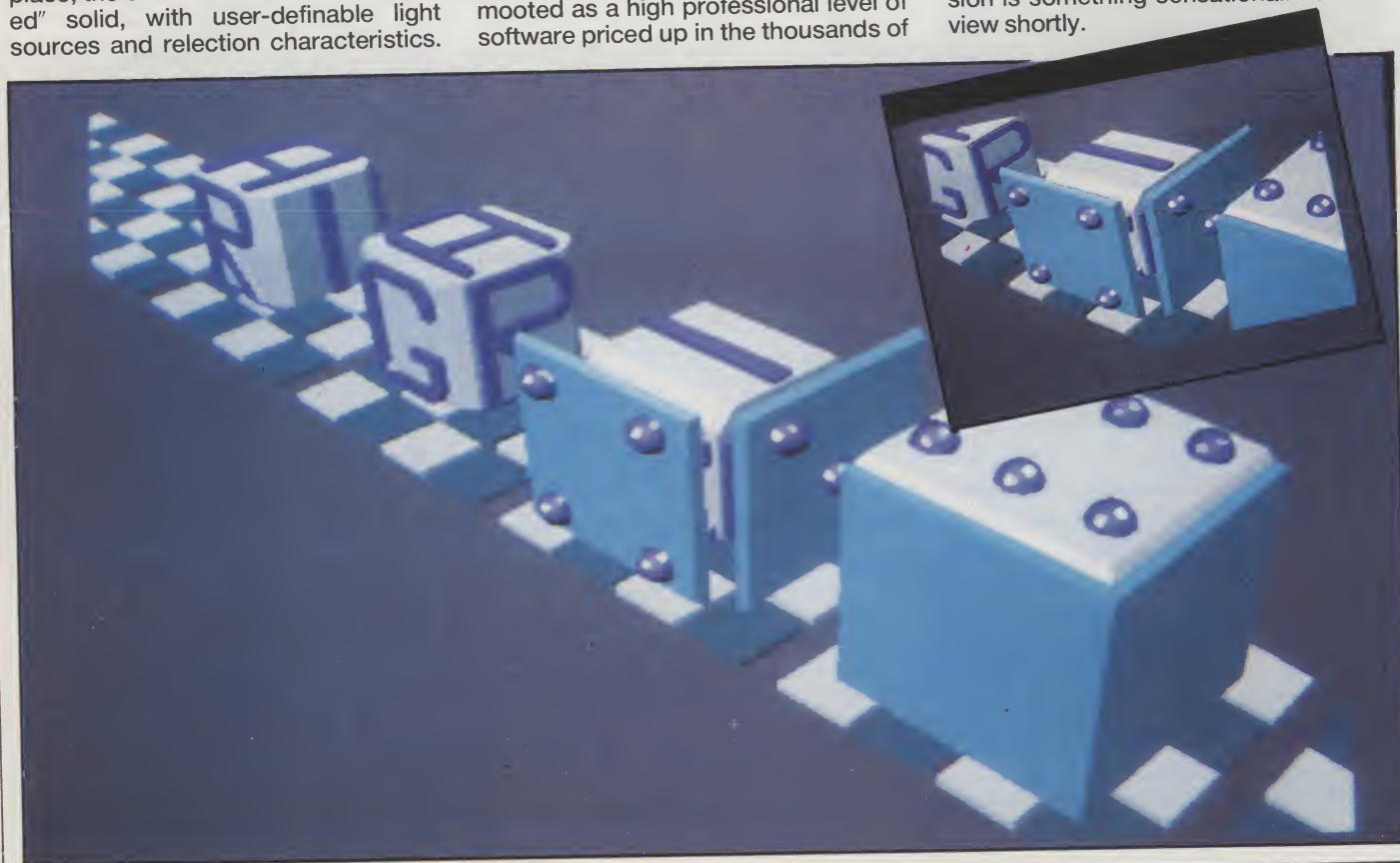
The state of Amiga 3D CAD is about to take another step forward with the release of Octree Software's Caligari. Running on machines with a minimum of one megabyte, it includes both wire-frame and solid 3D display modes, accessed through a user interface which Octree claim surpasses both keyboard and window-based systems.

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Although Octree claim no training is necessary with Caligari, a VHS video tape tutorial comes supplied with the software. Caligari was originally mooted as a high professional level of software priced up in the thousands of

dollars or pounds. A 'consumer' version is about to be marketed at around the £150 mark. From what we have seen, this package even in its cut down version is something sensational. Full review shortly.



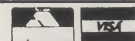
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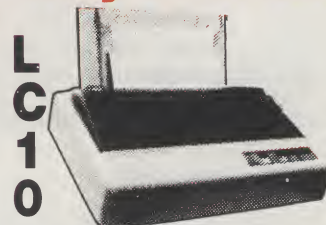
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Programming Tools (part II)

- The Include File STRUCTURE Macro

You might think it a little strange for a macro to be considered as a 'programming tool' but, for Amiga assembly language programmers at least, the macro at which we are looking should go down in history!

If you have peered through the Amiga's C header files you know that, amongst other things, they contain a mass of pre-defined structure definitions which relate to objects (like screens, windows, messages, nodes etc.) used by the system. Since a large amount of the Amiga's operating system was written in C, having these headers available is a godsend to the C programmer.

Fortunately the assembly language programmer has not been left out either because the equivalent assembly language 'include files' (i.e. those with the '.i' suffix) also have the same C structure definitions. 68000 assembler obviously does not support the use of C structures directly, but a macro has been developed which lets the assembly language programmer work with the next best thing. It is called STRUCTURE. It is brilliant, and it's one of the most important system macros available. On the Amiga its use will 'flavour' almost all the assembly language code you write making it cleaner, more comprehensible, and easier to maintain.

Firstly however some C code for comparison: suppose we were defining a C structure called ColourRange which stored details about minimum and maximum colour values, a flag to indicate whether values were increasing or decreasing, the amount of the increase, and the current RGB values. Using C we might decide to use something like this...

```
struct {
    UBYTE Minimum;
    UBYTE Maximum;
    UBYTE UpDownFlag;
    UBYTE Adjustment;
    ULONG Red;
    ULONG Green;
    ULONG Blue;
} ColourRange;

What the include file's STRUCTURE
macro allows us to do is to write similar
definitions in assembler. Here's the
above ColourRange structure equivalent...

STRUCTURE ColourRange,0
    UBYTE Minimum
    UBYTE Maximum
    UBYTE UpDownFlag
    UBYTE Adjustment
    ULONG Red
    ULONG Green
    ULONG Blue
    LABEL ColourRange-SIZEOF
```

STRUCTURE then, is a macro that calculates the offsets for the member labels which you have used in your definition. In the above example the result would be these offsets..... Minimum would equate to 0, Maximum to 1, UpDownFlag to 3, Adjustment to 4, Red to 8, Green to 12 and Blue to 16. The include files have macros which calculate the sizes of all the usual C type BYTE, UBYTE, BOOL, WORD, LONG etc., definitions - so the net effect is that if, for example, you use ULONG in the STRUCTURE definition the macro will arrange to add 4 (because a ULONG variable is 4 bytes long) to the offset counter after the current assignment has been made. LABEL is another macro which calculates the size of the struc-

ture - it is useful when you are allocating structure space.

Once such a structure has been set up the references to the individual members is done using symbolic names, rather than self calculated offsets etc. If register a1 points to the base of such a structure we can reference all of the elements within that structure using these sort of statements...

```
move.l d0,Adjustment(a1)
eor.b #$F,UpdownFlag(a1)
```

The benefits? Firstly, the code is a lot more readable. Secondly, if at some stage you make changes to the defined structure you do not have to worry about the offsets in your existing code - because the macro calculates the new displacements for you. Thirdly it lets you work, as far as the structures go, with almost high level language ease. The Amiga system structure offsets present in the include files were calculated by setting up STRUCTURE definitions equivalent to the C headers etc.

The best way to illustrate the STRUCTURE macro is with an example. The following code is an assembler patch which adds an interrupt server into the vertical blank interrupt chain. It does not do very much - just cycles the red component of a specific colour register. [The code itself is meant to be linked to a C module and when this is done the interrupt server is turned on and off by calls to PatchOn() and PatchOff().] The example shows you how the STRUCTURE macro is used to set up the member names, and there are plenty of examples in the code where those names are used to access particular structure members.

P.A.O.

The Amiga and its High Level Languages (Part II)

OOPS! Not an exclamation, but Object Orientated Programming, and other languages. Paul Andreas Overaa interprets.

C++

C++ (pronounced 'C plus plus') is an object-orientated programming language developed during the early 1980's by Bjarne Stroustrup's language development team. Throughout its development there has been a strong commitment to keeping C++ compatible with the C language although the interaction of late seems to have been a two-way process... some of the recent C improvements (such as ANSI C's use of prototypes), have been borrowed from the C++ language.

"This implements the idea of data-abstraction by relating sets of functions with the representation of a data type, so you manipulate data via functions defined within the same class."

C++ supports a construct known as a 'Class', which is similar to the class found in Smalltalk. This implements the idea of data-abstraction by relating sets of functions with the representation of a data type, so you manipulate data via functions defined within the same class. Encapsulation and 'data-hiding' are fundamental to these 'ob-

ject-orientated' languages. By defining objects which have their own data characteristics and procedures the programmer can work at a much higher level of abstraction, avoiding the nitty-gritty details that make the programming of larger projects difficult in other languages.

Lattice have provided a C++ development package based on the AT&T translator. It's a fully fledged professional heavyweight which has been used by commercial developers for some time. Lattice C++ was very expensive but recent price cuts have now meant that the package is selling for around 300 dollars in the States - from the details we have received it looks as though registered Lattice C users can knock another 100 dollars off that asking price.

Like C, the C++ language is very well suited to Amiga programming. Because C is a sub-set of C++ every C function is a C++ function and programmers can therefore mix their old C

code with new C++ ideas. The only potential disadvantage is that C++ needs 1.5 Meg to run.

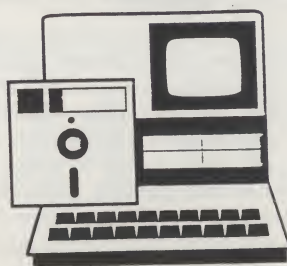
FORTH

Forth was created by the astronomer Charles Moore. It is a language which has never been very popular, but there has always been a small band of dedi-

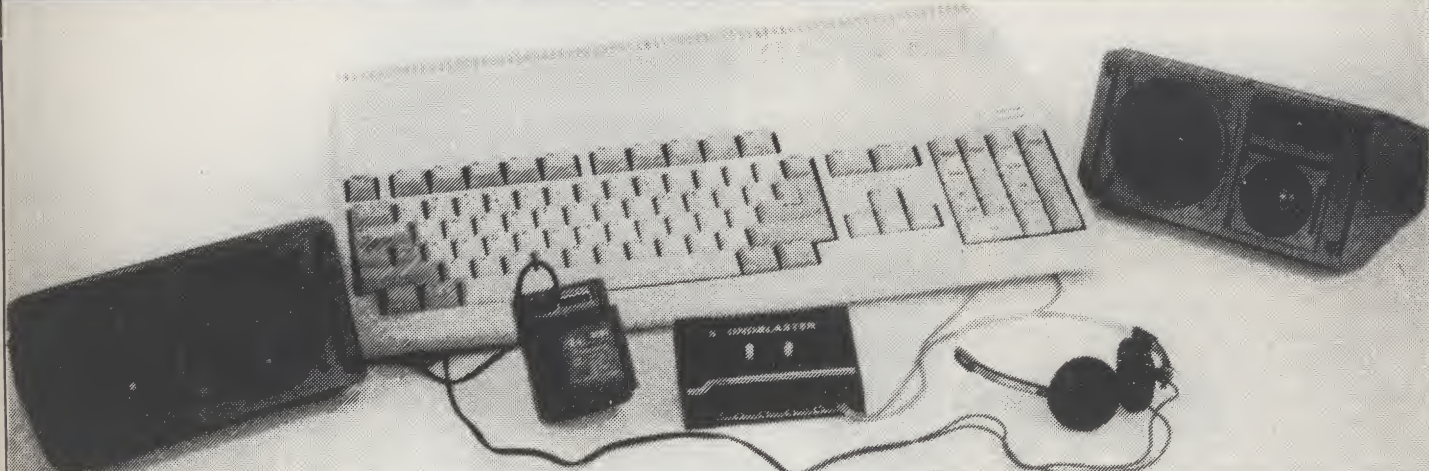
"Forth commands or 'words' can pass on or collect parameters - this provides a modular environment which helps with program design."

cated followers. Newcomers to programming often find Forth's use of reverse polish notation (RPN) rather confusing and there are a few other peculiarities which result in it being a language you will either love or hate. Forth is an extensible language. Forth commands or 'words' can pass on or collect parameters - this provides a modular environment which helps with program design. Forth programs however are not, in general, known for their clarity - some will tell you that the only person who can read a Forth program will be the person who wrote it!

Forth's extensibility, its peculiar stack operations and the fact that no clearly defined standard exists, has not



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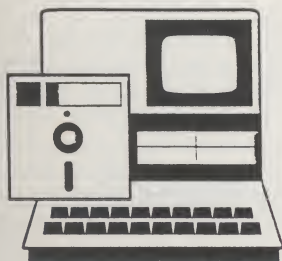
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helped Forth's popularity yet, despite these potential pitfalls, several Forth packages available for the Amiga.

MultiForth from CSI is a popular implementation and comes with reasonable documentation. Stub routines are used to gain access to the



Amiga library routines and some specially designed words allow you to work with C-ish type structures. Another implementation is JForth which comes from a company called Delta Research in the States. It's supposed to offer reasonable ROM Kernel support, provide floating point routines, and incorporate 4 different Forth dialects! MultiForth and JForth both sell in the States for around 100 dollars.

It is worth mentioning that HiSoft in the U.K. are going to be offering a Forth package in the 'not to distant future'. At the moment those, unfortunately, are the only details we have!

FORTRAN

I have not used FORTRAN on the Amiga, and I do not know anyone else currently using it. FORTRAN arrived in the early 1950's from a group headed by John Backus and the first commercial implementation appeared around 1957 on the IBM 704.

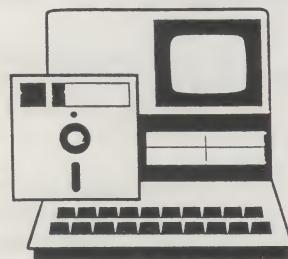
The language has therefore been around for over 30 years and has had its fair share of revisions and differing standards. In 1978 an ANSI standard arrived known as FORTRAN 77 and the reason I've mentioned that is that Absoft's AC FORTRAN, which is an Amiga version, is implemented to this particular standard. Absoft's AC FORTRAN costs just under £300.

FORTRAN was designed primarily for the solution of numerical problems. It is a compiled language which supports some modularity, sub-programs, local variables etc., and allows shared data areas to be used (although it is the programmer's responsibility to manage these areas). Source program layout rules are strict with many stemming from the old 'punch card days'. FORTRAN is an easy language to criticize yet it must be said that, after 30 years of use, vast numbers of sophisticated and useful FORTRAN programs and libraries exist - so the language still maintains a healthy following in the mathematics-

/scientific and engineering worlds. A previous commitment to the language, or access to pre-written routines, are probably the only reasons you'd want to run FORTRAN on the Amiga.

LISP

LISP is a functional language which is especially popular in U.S. Artificial Intelligence circles - it was actually developed by an AI group at the Massachusetts Institute of Technology (MIT) during the late 1950's. LISP is a recursive list processing language which was again first implemented on an IBM 704. It's functional language characteristics and clear links with Lambda calculus etc., seemed to have revitalized interest in the language again. LISP is a notable language in many respects... it makes little or no distinction between programs or data and provides list processing facilities which are both elegant and powerful.



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As far as I am aware LISP is the only functional language currently available on the Amiga and with the almost non-existent chances of seeing any Amiga based Hope/Miranda or ML/SML type software. Anyone interested in functional programming languages could find LISP on the Amiga quite interesting. The

"In many ways Modula-2 continues where Pascal left off."

only LISP interpreter available for the Amiga comes from Metacomco and costs about £150.

MODULA-2

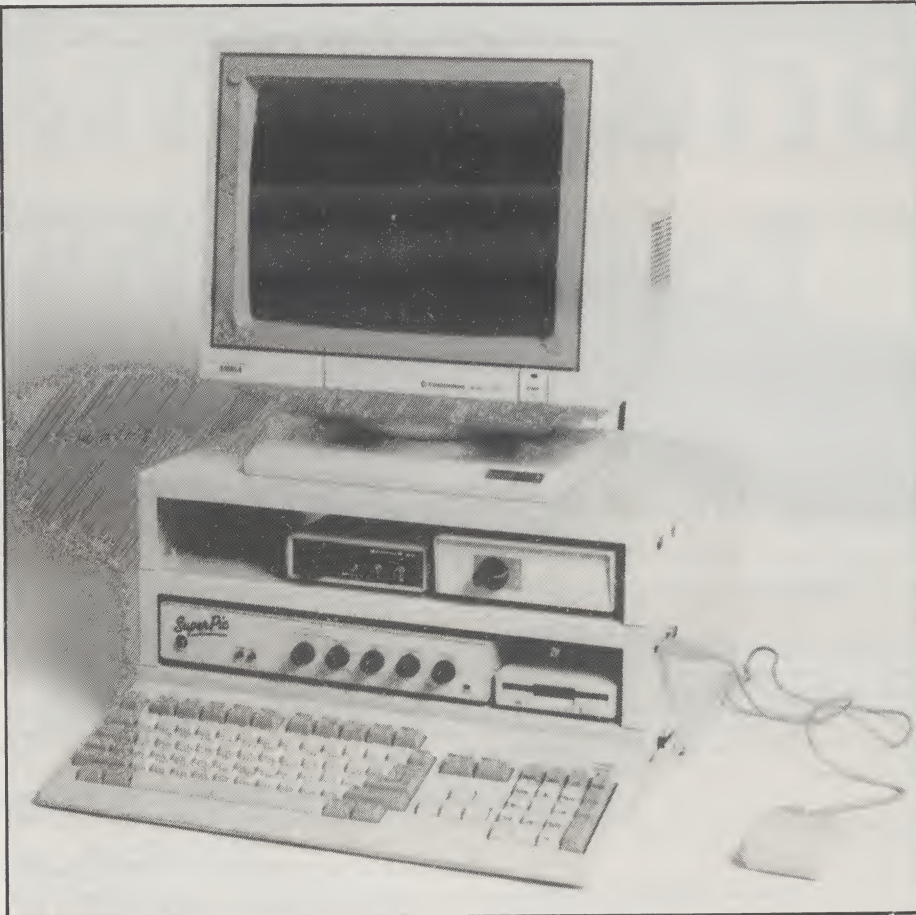
In many ways Modula-2 continues where Pascal left off. Like Pascal, Modula-2 was developed by Niklaus Wirth and the first compilers appeared about ten years ago. Modula-2 has much in common with Pascal but allows separately combined modules to be used and it supports concurrency. Modules contain declarations of types, constants, variables, and procedures with the declarations being split into definition and implementation parts. The details of the implementation can therefore be hidden from the user of a module. Modula-2 strictly controls the way data is passed between modules and this helps a lot on larger programming projects.

Modula-2 is a very useful language but still comes in for its fair share of criticism. One often voiced complaint, at least on the Amiga front, is the lack of support for pre-initialized data structures - the Modula-2 equivalent of C's structures have to be loaded up with data at run-time.

"Pascal is an easy language to learn, although some areas, such as its character handling facilities, do leave something to be desired."

On the whole Modula-2 is well supported on the Amiga. TDI were one of the first to offer a Modula-2 compiler but the environment is not an easy one for a newcomer to master - it has been called 'hostile' but I think this is a little unfair. What is certain though, and this is no fault of the language, is that you will need to know as much about the Amiga as any fully fledged C programmer to make Modula-2 do what you want, and that means sleeping with the RKM manuals under your pillow for more than a few nights!

Interface Technologies also provide a Modula-2 version, called M2Amiga which offers a source level debugger,



special purpose libraries and other development aids. It is said to be popular in the States, but I have not seen it in the U.K. anywhere.

It is generally agreed that the most friendly of the Modula-2 packages is the most recent one... Benchmark Modula-2 from Avant-Garde Software. It has good documentation and an easy to use editor/compiler/linker arrangement which makes life moderately easy for newcomers. It costs £140 but additional libraries for C type routines and IFF handling will, if they are needed, put the total cost up to around £300.

PASCAL

Pascal is the language adopted by many academics and accordingly it has had a lot of success in the educational sector. It has been used for teaching structured programming, for algorithm description, and as a vehicle for teaching programming in general. It does get used in the 'real world' as well and some quite large projects have been Pascal-based.

Pascal is an easy language to learn although some areas, such as its character handling facilities, do leave something to be desired. The only Amiga version available is Metacomco's MCC Pascal which sells at just under £90. It is not designed to make the most of the Amiga's facilities but it is more than sufficient to get you acquainted with the language.

PROLOG

AUI must have been one of the few UK magazines to see Prolog arrive on the Amiga. It has been produced by a German company called Philgerma and the only reason we did not review it was that an English translation was not available. A translation is underway so we are looking forward to seeing a U.K./U.S. product sometime around the end of the year.

A dozen languages and two dozen implementations for the Amiga gives the Amiga a range of high-level languages equal to many mainframe environments. There is plenty of choice for the beginner and also enough to keep the advanced programmer happy for a while as well. Don't forget though that much of the library routine interfacing requires that you understand the ROM Kernel routines, so at some stage in your programming you will need to tackle the rather complicated Amiga multitasking OS/library call arrangements. Taken slowly, with the right amount of patience these areas are actually enjoyable to learn about. Add to this the possibility of acquiring new programming language skills and you begin to see that the Amiga hasn't just opened one door into current technology - it has opened many such doors each giving you the opportunity to learn about aspects of programming which will benefit you for many years to come!

P.A.O.

UNIX - A system whose time has come

Why is the Unix operating system predicted to take 50% of all personal computer business by 1991? Andy Eskelson explains its advantages

If you have been following the computer press at all, you will know that there has been several announcements that a new Amiga machine will be produced that will support UNIX. The first of the announcements was for the A2500, but this seems to have been dropped. The latest is that the new machine will be called the A3000. So what is so special about UNIX that Commodore are planning to produce an Amiga which uses it?

Unix is an operating system, and it has an identical function to the Amiga operating system. That is to manage the computer resources, and to provide an interface with which the user of the system can interact.

Unix was first developed in the late 1960s by a programmer named Ken Thompson and some colleagues working at the Bell Telephone Laboratories in the USA. Bell were using a mainframe computer produced by General Electric, the GE 645. This computer ran an operating system called Multics. The system caused Thompson some problems with one of his programs, so he decided to transfer over to a single user computer, a DEC PDP 7. This was fine as far as computing power went, but the PDP 7 did not have the software support that the Multics OS provided. Ken Thompson did the only thing possible, he wrote his own system.

Unix and the C programming language are closely linked. Bell Labs, developed C at the same time as Unix was

produced. When the new DEC PDP 11 computers were used it was decided that Unix would be installed on this new machine. To do this the B programming language was used. This allowed a high level language to be used to write an operating system. When Dennis Richie developed C from B one of the first things to be done was to write Unix with the new language.

This gave Unix a large boost, because many machines were running B and it seemed a logical development that C would also prove to be a popular language, and as it follows a STANDARD then it should be possible to install Unix on any machine that can run C, hardware permitting.

The first example of this was when Unix was installed onto the Interdata 8/32 computer system. This was a success and since then Unix has been installed on many more computer systems, probably more than any other except MSDOS.

For quite some time AT&T (Bell) did not license Unix except to some defense agencies and to Universities. Then, in 1978, AT&T licensed Onyx systems for Unix, and a micro was launched in 1980. In 1981, AT&T reduced the cost of Unix even further as more and more computer manufacturers implemented it as their standard operating system.

Since then AT&T have made several announcements, the main one in 1983 being that the Unix System V would become the standard, and all enhance-

ments would be upwardly compatible. (This is like CBM saying that your programs will run with all future versions of kickstart and workbench, providing that you follow the rules.)

There are several versions of Unix, briefly they are:

Version 7 - this was the first to be commercially released.

PWB/UNIX - a specialized version with utilities for managing software development

Unix System III - a combination of V7 and PWB.

Unix System V - the latest and the only one that AT&T actively support.

As Unix has a very large base of machines it is hardly surprising that AT&T did not do all of the work on the system. The University of California at Berkeley produced its own version of Unix mainly to support the VAX series of computers. This is commonly known as Berkeley Unix or 4.1 and 4.2bsd. Berkeley Unix has a couple of enhancements, (AT&T have adopted some of them) one is the text editor called vi and a shell program designed for C programmers called csh; now if you are into Amiga programming with C you will have probably come across things that are often claimed to be a csh-like utility, well this is where it comes from!

The version of Unix that most people will come across is XENIX, this version of Unix is produced by Microsoft and is available for the Intel range of processors and for the Motorola 68000 proces-

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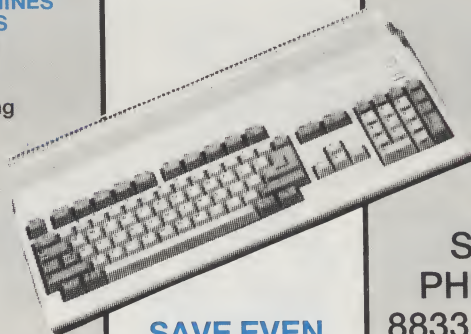
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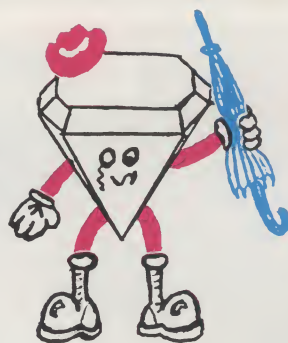
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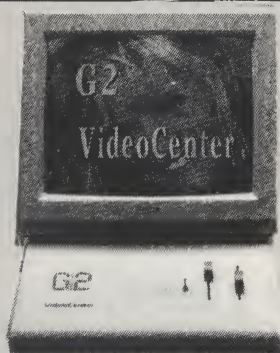


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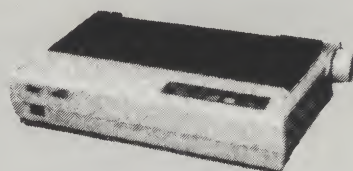
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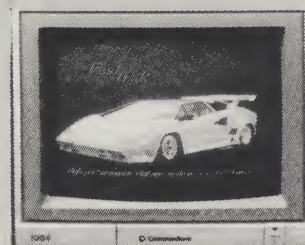
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continued from page 41
sors which the Amiga uses.

Due to the number of IBM PC based systems and the various 68000 based computers that are about Xenix is the most widely used version of Unix that is on the market today.

Like most computer operating systems Unix is based on a set of common routines. This is often called a Kernel and Unix is no different. What makes Unix so different is the number of support commands, over 200 and growing almost every day. Lets have a look at how the Kernel fits into the scheme of things.

Applications

Shell

file management

security

I/O

Hardware

Hardware Kernel

Process

scheduling

Memory

management

system

accounting

Date & Time

Interrupt & Errors

Unix Utilities

The Kernel is the interface between the software and the hardware of the machine, and it is to the kernel that suppliers who want to install Unix onto their system must make changes. Every machine will have a different way of addressing its I/O hardware, so the kernel must be changed to reflect this. More importantly the kernel must send the correct responses back the the program that called it. These responses must be the same for all versions of Unix, that way programs written for one machine may be ported to a new machine without too many problems.

THE SHELL

The Amiga Workbench V1.3 has a modified CLI interface called the shell. This is another direct relationship to the Unix system. The Unix shell is the program that interacts with the user. It provides a means of inputting commands and running programs. See how many of these shell functions you can recognize in the Amiga shell. I/O redirection, Pipes, Wild-Card matching, Shell Scripts, Shell Variables, Programming language constructs. You should have noticed that the Amiga shell has all of these features. An example of a shell command would be:

```
ls -l /primary/system/utilities
```

ls = LiSt files : -l = long listing : then the path.

Many Unix commands have very short names, which bear little resemblance to the operation of the command, but after a while you become used to them.



THE FILE SYSTEM

The Unix file system is fairly complex, and provides several functions that are only useful when you are working in a multi-user environment. Many of the features will be familiar to Amiga users. Hierarchical file structure, this means that files can be grouped into directories and directories can have directories within them. This makes the location of files very logical (hopefully!).

Files can grow as needed, and only take up as much storage as needed. Sounds a very logical thing to do, but there are filing systems that impose a limit on the file size and the number of files even! One example of this is CP/M file sizes are always in a multiple of a block size, which can be 4K, so if your file was 4001 bytes long you would use 8000 bytes of storage!

Unix allows the file to be in any format required by the user. There are no SEQ, REL, USR or PRG files at all! as there are on the C64 disk drives. Every file is of the same type and the programmer can do with them what he will.

As far as Unix is concerned there is no difference between the file system and any other I/O device such as a terminal. This makes I/O programming

very streamlined and easy to write.

Unix has a fair amount of file security built into the file system. This prevents access to files by other users. It is possible to allow access by a selected group of users as well.

Unix provides a means to allow several programs to access the same file, and still keep the data intact. This is vital in a multi-user system, when several people may be working with one file.

MOUNTING

Disk storage is the main storage used by most computers, and the Unix system will have one disk that boots up the system. But if this is not enough then there is provision for extra disks to be added. The problem with this is that the Unix system has to be told about the extra devices before they can be accessed by the user. Once the system knows about the extra disks they are treated as a simple extension to the main disk. The process that has to be performed to tell the system about the extra disks is called MOUNTING... I wonder where we have seen that before? The Amiga perhaps?

One of the features of Unix is that it treats I/O devices as if they were files. All I/O devices are given a name, and you

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can find them in the dev directory. eg terminals are given the name of tty (short for teletype) and a number such as tty23, remember that Unix is a multi user system and could have dozens of terminals connected to it.

File management is a very important part of the Unix system, and there are a dozen commands or so that are used for this purpose. we have already looked at one of them, ls, others are:

cd (change directory)
pwd (print the full path of the current directory.)

rm (remove files)

rmdir (remove directories)

mv (move and rename files)

Each of these commands has many options such as the -l option in the ls command, so you can get the idea that this is a BIG operating system.

BATCH COMMANDS

This is a deceptive part of the Unix system. the most common commands are 'batch' and 'at'. The at command is used to specify when a sequence of events will happen. eg at 4pm-dofile This will run the file 'dofile' at 4pm. batch is similar, but rather than specify exactly when the command will run, you allow the Unix system to decide when it will run the commands, as and when the systems workload permits.

The Unix system provides a very good base for the applications prog-

rammer to work from. This means that the user need not know anything about the Unix system other than how to log in to the system. The programmer can prompt the user with text and menus as required. Unix provides over 80 operating system calls. This enables application programs to be highly portable (these are the kernal calls mentioned

"What Unix does is to treat the disk drives as if they were memory. This means that when the computer gets busy it will be constantly swapping files in and out of memory."

before) File locking is provided, this prevents a file being corrupted when used by many users at the same time. Memory management, Unix has a fairly common system for mainframes, but it is a system that is not too common for PC's, and that is virtual memory. If a Unix system has many users, the it is easy to see that when these users start demanding programs to be run, the main memory of the machine will very quickly be eaten up. What Unix does is

to treat the disk drives as if they were memory. This means that when the computer gets busy it will be constantly swapping files in and out of memory. This allows the system to multitask with only a limited amount of main memory to work with.

Unix utilities are normally designed to do one thing very well and not much else. However, this is not as limiting as it may seem at first. Unix commands can be strung together to form a composite command that will do the job that you want. This is achieved by the use of Unix PIPEs What you do its to send the output of a command to a pipe, the next command will take its INPUT as data form the pipe. As far as the system is concerned the pipe is just another file. You can keep this up for as long as needed, thus building up the required commands.

One command that keeps cropping up in the Amiga PD libraries is **grep**. This is a well used Unix command that stands for **Global Regular Expression Print** see how obvious Unix commands are (sic) what this command does is to examine a specified file for a string or pattern of some sort, and it will output any lines containing that pattern to the output device/file.

A.E.

Continued next month

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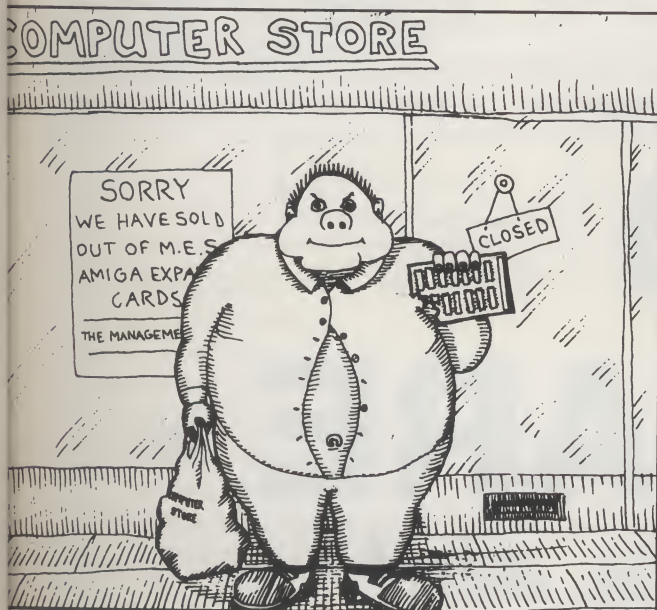
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note insertion and a mass of other options.

Master Tracks Pro provides six special MIDI data windows for editing non-note type MIDI events. Instead of having to work with long lists of numbers you see your data graphically. Windows are available for pitch bend, channel pressure, key pressure, modulation, controllers and program change data. You can set markers, use zoom commands to see more or less data at any one time, can thin out data, switch tracks, insert events and generally make any changes you could possibly need. All of the data windows look and work in a similar fashion, so it does not take long to feel comfortable with these areas of the package.

The Master tracks Pro's Edit and Change menus deserve special mention. From the 'Edit Song' window they will operate on songs, from the Step Editor or MIDI data windows they'll operate on increasingly more detailed areas. Master Tracks Pro is a serious MIDI tool and so includes all the advanced facilities one would expect.... gradual changing of velocity over selected regions, use of conductor tracks (special tracks which control the tempo and rhythm structure of sequences) and options for stripping and selectively extracting controller and

other MIDI events.

A 'humanising' option is also available from the Change menu and this enables you to randomize MIDI data within chosen limits. The quantize option allows you to shift start times away from the quantize grid, and allows you to specify the quantize operation in great detail, e.g. if you want to quantize all notes which fall from 35% before the current 16th to 65% after the current 16th then you can do it. The intensity of quantization is also adjustable although the default value of 100% ensures that notes will be fully quantized to your settings. An intensity value of 50% would however move notes only half the distance, thus it is possible to gradually tighten up a piece without losing the natural feel in one foul swoop. Another useful facility is the 'Fit Time' option - this allows you to stretch or squeeze sections of music so that they fit into a specified time.

A 'Goodies' menu gives you a set of commands for tailoring Master Tracks Pro to your system, and for controlling the sequencer from a MIDI keyboard. First there are some simple toggle commands for displaying and activating screen windows and after that comes the more detailed stuff. 'Markers' can be placed into a sequence in all of the editing modes and the markers window

available from this menu acts as a SMPTE hit list. SMPTE locations are displayed in addition to measure, beat and clock locations. Markers can be set, edited etc., and you can even lock a musical event to a specific SMPTE location. A MIDI keyboard set-up option brings up a dialog box for configuring the sequencer to your keyboard. There is a host of other facilities available including.... setting for internal/external clock, MIDI Time Code, SMPTE Formats, start time, selective filtering of events on input and SYSTEX message recording.

The Record Filter option in the 'Goodies' menu allows you to quantize MIDI events on input. This, coupled with the powerful post-record quantization facilities makes the Master Tracks Pro package win hands down over the competition in this particular area.

Conclusions: Passport's Master Tracks Pro sequencer is a very powerful. I am still feeling my way around this package at the moment but it is clearly one of the leading contenders as far as heavyweight Amiga sequencing goes. The only unfortunate thing is that it has a price to match - Master Tracks Pro costs £285 (inc. VAT).

P.A.O.

Contact MCMXCIX on 01-724-4104 or 01-258-3454.

PD SOFTWARE - *Free, Gratis, and Practically For Nothing*

This month, we take a detailed look at two small but powerful PD utilities that can make the life of the Amiga user considerably easier!

POPINFO v3.0

USAGE: POPINFO [-N]

PopInfo is a 22K utility, written by Jonathan Potter of South Australia. It is meant as an extension to the Workbench, and, amongst many other things, solves one of my pet hates - it shows the space left on your disk drives

in Kilobytes instead of blocks (unlike Info!). It also provides you with a Virus detection and elimination toolkit!

You may start PopInfo from Workbench, or from the CLI. When run, a small icon will open in the top left corner of the WorkBench screen. You can drag this "icon" around by the "Pop" bar at the

top of it. To activate PopInfo, simply click on the icon. A window will "Pop" open, containing useful information about the computer. The information contained is as follows:

Unit: This is the device name, eg DF0:, VD0:, etc. If no disk is present in the drive you will see "No disk present in drive" following the unit. If the disk is a Kickstart disk you will see "Kickstart disk", "Unreadable disk" if the disk is unreadable, or "Not a DOS disk" if the disk is a non-DOS disk.

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DON BLUTH'S

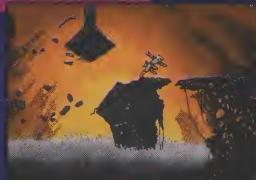
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Videon

Fed up with grey days? Get in the pink with a full-colour digitiser; Peter Lee puts you in the picture

In itself, video digitising is something of a sterile exercise. Capturing an image into the computer's memory is usually only the first step in the long path to creativity. But once you have grabbed your picture in a form to which both you and the computer can relate, then the scope for artistic achievement can be limitless.

Digitisers - hardware add-ons which convert pictures into a form computers can store and display on screen - have been around for several years, and the Amiga has attracted a larger than aver-

Well worth considering among the new breed of units is Videon, a full-colour digitiser, which although incapable of capturing images in real time, produces some crisply realistic ones at around the 75 second mark.

If you intend digitising from a VCR, then it must have a steady pause function to enable the digitiser to grab a still image for upwards of a minute in slow mode. Two VCRs I tested - on a HQ model - were totally inadequate. So a colour video camera is recommended for still work, and this test was carried

to alter the light source too much - low light levels were easy to compensate for.

The digitiser plugs into the Amiga's parallel port and is powered by a largish transformer (which on my two test models still had a European two-pin plug that I had to replace with a standard UK 3-pin one). There is also a standard phono socket to receive a PAL video signal.

One of the best features of the hardware is a pass-through for the monitor signal; using two toggle switches on the unit, your Amiga monitor can display either the incoming video image from your source, or the actual Videon control screen. To someone who has previously had to have a separate monitor to adjust the video signal, this is a big bonus.

Versions of the unit are available for Amigas (500, 1000 and 2000), and you must specify which model at the time of purchase so that the correct cabling etc can be provided. I was initially given a 500 model to use on my 2000. Believe me, trying to connect a 3" parallel cable is no joke. The longer cabling for the 2000 has the advantage of being well-screened to minimise interference, though on mine there was no indication as to which side of the connector should be topmost.

THE SOFTWARE

The menu options are well designed and easy to understand. Selections are made from a control panel at the bottom of the screen. The digitiser works in all modes and interlace, in PAL and over-scan, and as well as capturing pictures in the 4096-coloured HAM mode, incorporates one of my favourites - 64 half-brite.

You would be surprised how well the software copes with rendering a colour image in 64 colours; seen alongside the HAM version of the same picture, there is very little to complain about, and for me any aesthetic quibbles are balanced by the ability to import half-brite screens into DPaintIII for the real work to begin. Otherwise, if you digitise in HAM, you



age range of products, thanks to its graphics power, colour capabilities and resolution. The famous Digiview helped make the Amiga a success.

Slowly, a new generation of video digitisers is emerging which supercede their earlier counterparts with the ability to digitise in full colour in one scan. There is a price to pay for this sophistication, but anyone who has had to fumble with coloured filters may feel this more elegant method is worth the extra cash.

out using the Sony handycam.

THE UNIT

Videon is housed in a black metal case around the size of a hard-back book. It has three control knobs on the front, which seemed a little delicate, and which control a number of parameters which affect the final image. These control the contrast, brightness and colour information being passed to the digitiser, and I found them extremely valuable in getting a good image without having

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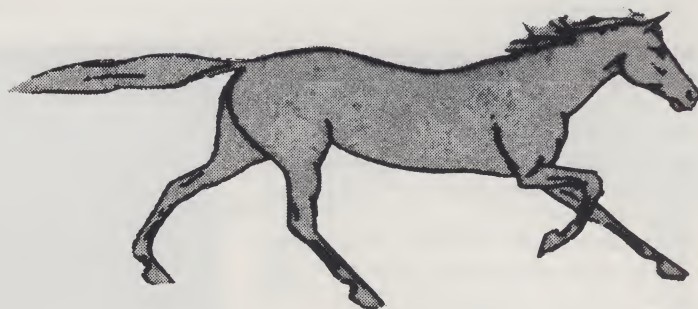
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will need the likes of DigiPaint III or PhotonPaint for the artistic work.

Videon claims to use a sophisticated digital filtering technique, and certainly there is little to fault in the quality of the images. Not as sharp as some pictures I have seen but at the price the quality, colour and range of control is surprising. And no noticeable interference from the colour camera, which is the curse of my current digitiser, Perfect Vision.

Included in the software, and accessible from the digitising menu, are a number of special effects with which to enhance (or degrade!) your image. Chief among these is surface mapping, allowing images to be wrapped around pre-defined shapes in 3D. This applies to images you have just digitised, or any IFF screen you feel like loading in.

The base mapping shapes are not in themselves too exciting - for instance there is no sphere - but by wrapping a screen around a barrel or pyramid shape some intriguing effects are possible.

The software takes a little time to work out the 3D aspects of the process, and features full hidden surface removal and an opaque background colour. And the co-ordinates of the shapes are controllable, using a wire-frame representation to give real-time control before confirming the surface map. This



includes altering the angle of view, size, and distance in the z plane.

Mapped screens can be saved in standard IFF form to be used as you wish.

There are a few cosmetic functions available too - pixelisation, which converts the image into even-shaped pixels

of a user-definable size, threshold control which will convert the image into two colours to create a logo, solarisation for 'overexposing' the picture, and a full-screen fill using small versions of the main screen.

An area of the image can be zoomed to fill the screen, though the antialiasing leaves a lot to be desired. Any alterations to an image are not permanent until you click on the snapshot button, so experimentation is non-fatal!

THE MANUAL

Nothing short of disgraceful for a product of this calibre. But Power Computing assure me a new version is in production. I hope it is by someone with English as a first language!

CONCLUSION

In the world of digitising, full-colour is the current buzz-word. Videon offers a good entry into this exciting field, but it is no speed-merchant. Real-time picture grabbing is still in the domain of the more expensive add-ons. However, anyone used to the likes of Digiview will realise how much potential there is even in a slow scanner. To grab an image in full colour in one pass, in any mode (HAM and half-brite included) is a major advance in this price range. Bear in mind, though, that you will need either a colour video camera or a VCR with a perfect still-frame capacity (not too many of those around in the home) to make any use of Videon. Picture quality depends to a large extent on many variables - lighting, source signal and display mode; but I was able to achieve satisfactory and worthwhile results almost every time. I found the software a dream to use, and consider Videon good value for money.

P.L.

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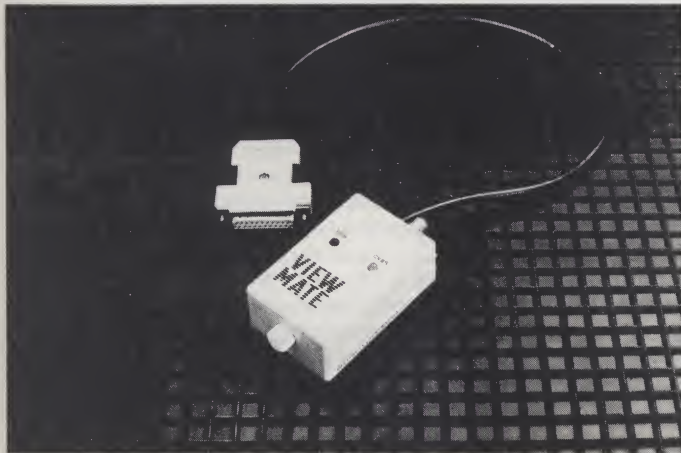
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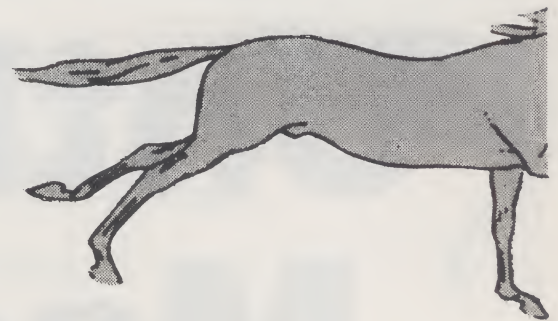
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Unthinking Machines

How far should we be prepared to allow computers govern our lives? Peter Lee offers a personal view on the potential dangers in artificial intelligence and knowledge-based systems

Trust is the acid test when it comes to giving greater responsibility to computers. Ask yourself seriously if you are happy at the prospect of a machine making a decision which could affect your whole life. Uneasy at the prospect? I am too.

It is not so much the fact that people are better decision makers, who never make mistakes - look around and just see the tragic chaos caused by bad decisions, wrong moves or sheer carelessness. People are fallible.

The problem is that, to coin a cliché, the person in the street has a perception of computers as infallible, as objective decision-makers serving the public good; and because of this they seem willing to sacrifice human contributions to a problem in favour of advice from a cold lump of logic circuitry.

For despite the horror stories about computer cock-ups, albeit non-hazardous things such as bills for a million pounds, the average person will generally accept that computers are more efficient and even 'cleverer' than humans. How has this trusting faith come about?

Well, despite the half-hearted efforts by Governments to bring computer literacy to young people, the majority of the public seem to have no interest in, and consequently no deep knowledge of computer systems. People who daily use a computer have little idea of how the thing works, or even what a program is.

Many computer owners themselves suffer from tunnel vision, a kind of techno-illiteracy which allows developments in the field, and the wider implications to pass them by.

But one day America's Strategic Defence Initiative could be on line, using computer links to help formulate deci-

sions which will affect all of mankind. A logic gate having a bad day here could well lead to Armageddon. One bit of data wrongly interpreted and all the computers in the world will die along with us. Lucky machines - the one thing machines lack is a sense of death.

And this is not some fantasy from a science fiction film either; we aren't talking about War Games or 2010, and the sooner people rid themselves of the misconceptions about honest, error-free systems the better. There's a world of difference between HAL sacrificing himself to get the astronauts home in the sequel to 2001 and the end of life as we know it.

But the awful truth is that people believe in the fantasy web which has been woven by the sci-fi optimists of a better future ahead, in the potential for infallibility of computers; they'd rather, because the alternative is to trust in mankind, whose record over the past 6,000 years has all the prospects of a self-destructive climax.

Since their invention - and actually beforehand, in man's dreams of robots - computers have been cherished as the answer to any problem; whether it's a mechanical or mental impasse you're facing, the little box with all the wires in it must surely come good. How could you not love R2D2?

But let's move this argument into the reality of your own situation. Those of us who actually work with computers quickly realise that the clichéd 'garbage in, garbage out' maxim is a solid gold rule. A computer is only as good as the program it is running. Without instructions, the machine is simply good at attracting dust.

This is where the first major crunch occurs, because of an overwhelmingly simple piece of logic: mankind is not

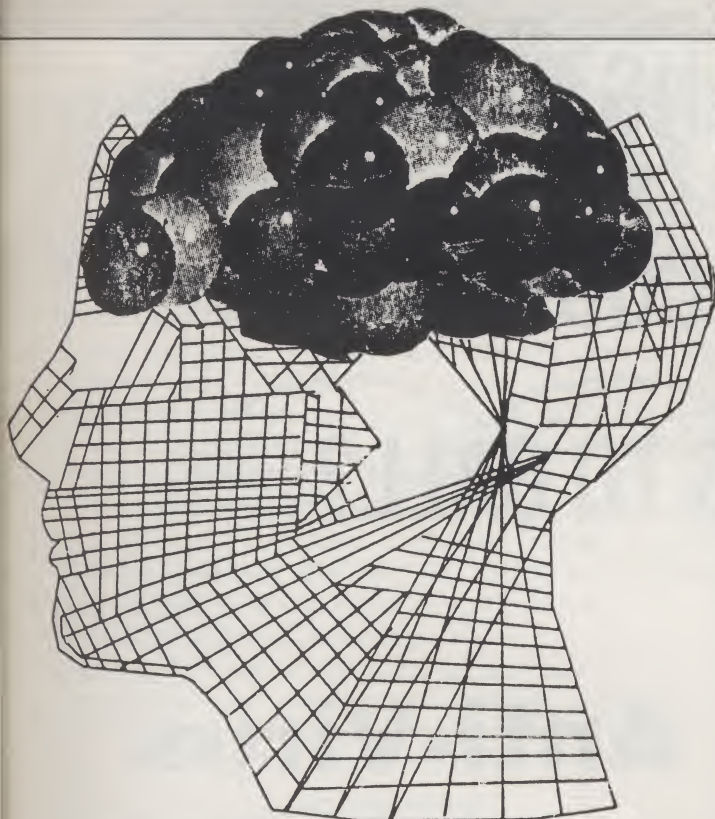
infallible; mankind programs computers; computers are not infallible. If you don't believe me, just mull over a few of your mistakes, then recall all the error messages which your computer has spat out. And the race continues to provide machines with an intelligence; a reasoning power based on learning, but sparked off by a human programmer.

At its rawest level, this works in some computer games such as chess, where clever programming allows a computer opponent to store moves and games in which it did badly, and then refer back to them to ensure the same mistake isn't repeated.

The fact that it is an infant science is reflected in the kind of level computer learning has reached - matching shapes of object, remembering maze layouts and other basic first steps. But the goals are as expansive as your imagination. How about a pilotless passenger jet controlled by a computer able to react to emergencies? Or a life-support console which switches off when it detects brain death?

To sugar this bitter pill, I'd like to concede that in every debate, the one on computer systems has a contrasting side. Leaving alone the military aspects, computers really have changed the face, and pace of medicine, education, transport and labour, mainly for the better.

A hospital without its battery of circuitry - life-support system or in a more specialised field the body scanner or heart scanner as the Amiga can now be, would be like going back to the dark ages. In this respect, with monitoring equipment we do actually put our lives in the care of computers - but it is doctors who still make the reasoned decisions based on their interpretation of the data.



These benefits aside, the crux of the matter lies in the fact that people expect so-called knowledge-based systems to mirror the human thought process; the reasoning goes that if you or I would make decision A or B based on the available facts, then the computer should mimic that. But you and I, weighing the same facts with different balance, may make opposite decision - which is the right one, and which should the computer make?

In the case of the proposed SDI plan, presumably the Military will program their own version of the 'truth' into the logic. But my opinion of the 'truth' may differ widely from theirs. But the computer will never know about contradictory attitudes. Its job is to function as programmed.

Current work in the field of knowledge systems and AI tends to concentrate on fact - the hard-edged fact of Dickens' Hard Times character Thomas Gradgrind, whose definition of a horse is as a herbivorous quadruped and not a graceful creature of flesh and blood; it omits hard to grasp, human feelings. For instance, a medical computer program, responding to your answers, may recommend a course of treatment which could rob your life of dignity. Theoretically it would be right, but at what cost to the quality of life?

And while current findings show no actual physical accidents caused by knowledge-based systems, the more their decision capabilities are relied on the more scope for failure. The potential impact of 'guessing' computers has sparked enough concern for a report to be prepared on the pros and cons of knowledge-based systems.

The Council for Science and Society's findings are generally optimistic, with two main areas of concern - using the technology to control machinery, and for military use. The latter is perhaps stating the obvious, but Governments do rely on advice from the Services, whose motives are not always in the best interests of peace in particular, or life in general.

The report makes a sound, if seemingly impractical recommendation for the establishment of a code of conduct for companies producing and selling artificial intelligence programs, and for professional bodies dealing with the technology.

The most radical proposal on this code would be the right of an individual such as you or me to know initially what exactly the AI program will be used for, and then have the right to refuse to work on it with no penalisation if the work is considered potentially harmful, or likely to be misused.

This is a pretty heavy-duty suggestion, and one which is hardly likely to be welcomed with open arms by development companies. But you cannot expect people to devote their abilities to seemingly innocuous data assimilation programs which might have devastating implications on people's lives. It's precisely at this abyss, where the anti-septic world of computer programming

meets real life, at which the greatest danger lies.

Passing on the onus of responsibility to a machine with no sense of that particular concept is frightening, to me at least.

Do we really want to subjugate human reasoning to the will of a machine? Whichever way the balance tips, mistakes will continue to be made whether it is a machine or man at the helm.

The problem is that a machine has no conscience, no urge to improve. No soul.

A sense of right and wrong, or more properly good and evil, is an instinct which human beings alone have: There are some very smart bombs out there - take the cruise missile's guidance and evasion systems as an example. Pretty sophisticated technology here. But for all that, a bomb never asks where it is aimed - at least a man could (and maybe should).

The debate has only really just begun on a young science. Knowledge systems and artificial intelligence offer great promise; but in the next decade, we should ask ourselves if we are going to be the masters, or the slaves of computers.

And the answer really is up to you. After all, you possess the reasoning power - for the time being...

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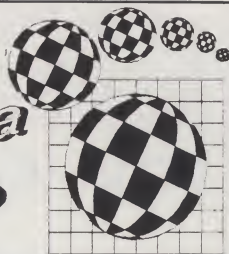
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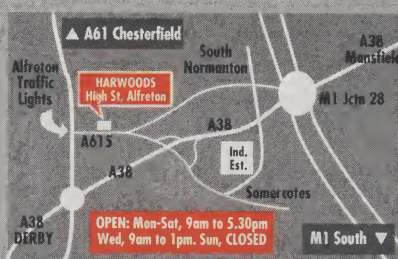


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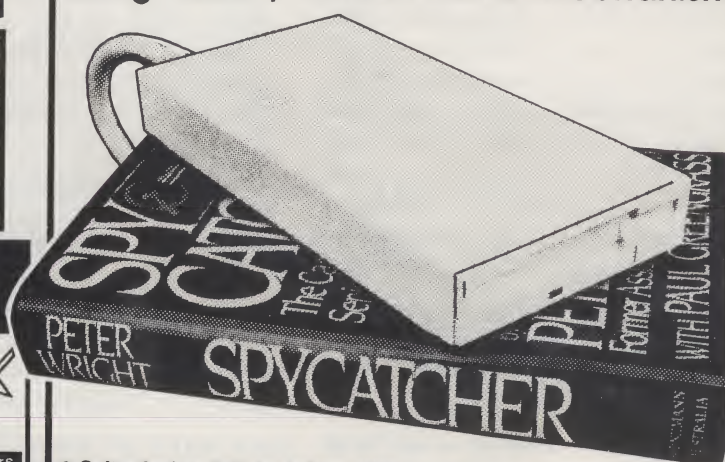
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Calling ALL Programmers

*Psst, need access to a standard file requester?
Want to implement a CLI command but you do
not want to write a template handler.
Mark Smiddy says - look no further than
the ARP library*

CONTINUED FROM LAST MONTH

```

lea path_name(pc),a0 assembles complete filename
move.l fr_File(a4),a1 but does not **** on originals
CALLARP TackOn

move.l fr_Dir(a4),a1 * print the pathname
CALLARP Puts just like in C
move.l fr_File(a4),a1 * print the filename

CALLARP Puts ARP has Printf too,
lea path_name,a1 * print the complete path+file
CALLARP Puts and even, FPrintf!
                                * Wicked!

bra doit Start all over again

doneit move.l _ARPBase,a1 finished - close down
CALLEXEC CloseLibrary

quit_fast
rts
fr_func * Called by File Requester!
rts * Not used here, example only

NULL dc.w 0 just null y' know
_ARPBase dc.l 0 space for pointer
_Result dc.l 0 space for return values

*****

* This lot defines a standard file selector from ARP!
* Works just like a structure in C (only simpler to read!)

f_name dc.b 'Test_file',0
ds.w FCHARS
p_name dc.b 'DH1:',0
ds.w FCHARS + (DSIZE * 10)
greet dc.b 'Greetings, click on something',0

select dc.l greet,f_name,p_name *fr_hail,*fr_file,*fr_Dir
dc.l NULL Window requested struct
dc.b FRF_NewWindFunc Set bitdefs (not used here)
dc.b NULL Reserved for expansion
dc.l fr_func Func to call wildcards
dc.l NULL Reserved
dc.l NULL Reserved

*****

path_name ds.w FCHARS + (DSIZE * 10) Somewhere to store a path

* this defines the name of the ARP library
arpname ARPNAME
, HARM
is a waste of

```


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> technology (tek'n-o-lo'ji) the practice of any of all of the applied science that have practical value and/or industrial use: technical method(s) in a particular field of industry.

> xenon technology (zen'on tek'n-o-l-ji) the best definition!

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continued from page 48

Bytes: The total number of bytes available on the unit (a lot more useful than blocks!) It is interesting to note that the 880K per disk we are supposed to get is actually around 837K...

Used: The total number of bytes used on the unit.

Free: The total number of bytes free on the unit.

Ers: The total number of hard errors on the unit.

WPS: For Write Protect Status, this is either R/W (Read/Write) or R/O (Read Only)

SBB: Only applicable for disk drives at the moment indicates whether the disk has a Standard BootBlock. N/A will appear if the unit is not a disk drive. No indicates a non-standard bootblock, and Yes indicates a standard Commodore bootblock.

NBB: Indicates No BootBlock (ie the disk is not installed). The [-n] option when running PoplInfo stops any bootblock checking, so you will see N/C (No Checking) for disk drives.

VIR: Indicates a currently recognisable virus has been detected.

PoplInfo currently recognises the SCA, BYTE BANDIT, BYTE WARRIOR, OLD NORTHSTAR, NORTHSTAR, REVENGE, OBELISK, PENTAGON, SYSTEM Z, UF, HSC, DISK-DOKTOR, GRAFFITI, 16 BIT CREW, PHANTASM, ULTRAFOX, and LAMER EXTERMINATOR viruses. Which virus it is will be displayed in the BootBlock window if you view the bootblock. No (for non-standard bootblock) appears in pen colour 2, and VIR (for virus) appears in pen colour 3.

Also displayed in PoplInfo are Chip RAM free, Fast RAM free, total RAM free, and the current system time.

At any time, while the info window is active, a press of the space bar takes you into the BootBlock section. A large (screen sized) window opens, which displays half (at a time) of the bootblock, both in hex and ascii. The BootBlock window starts off with the bootblock of DF0:. On the right hand side of the BootBlock window are several gadgets, specifically, DF0:, DF1:, DF2:, DF3:, BLK, SAVE, LOAD, WIPE and EXIT. DF0: to DF3: select which bootblock is currently displayed.

BLK (either BLK1 or BLK0) allows you to view the other half of the bootblock.

SAVE allows you to save the bootblock to a disk file, and LOAD allows you to restore a saved bootblock to a disk. Both SAVE and LOAD present you with a file requester, which prompts you to enter a filename.

WIPE installs the currently selected disk. Both LOAD and WIPE ask for verification before carrying out your instruction.

EXIT exits the BootBlock window

and returns you to the info window.

PoplInfo automatically checks the memory for any of the currently known viruses, when run, and erases them if found.

What can I say? I love it! PoplInfo has found a permanent place on my Workbench disk. Thank you, Jonathan Potter.

PoplInfo is in the Public Domain, and can be found on Fred Fish Disk 223.

FIXDISK

FixDisk, written by Werner Gunther of Heidelberg, West Germany, is powerful yet easy to use program designed to recover as much as possible from a defective disk. It can recover damaged (unreadable) tracks, it has functions to check file integrity, to check the directory structure and functions to undelete, copy or show (even defective) files, fix corrupted directory pointers etc. Everything can be selected with an intuition interface, which is altogether more friendly than messing about with the CLI!

Now the bad news: the program does not keep track of 'loose blocks' i.e. files without a file header like DiskSalv. It does only work with disks/partitions using a maximum of 4063 blocks. It may work with larger disks too, but the author didn't have a hard disk, so he couldn't test it out. Disks with more than 4063 blocks are rejected by the program. After starting FixDisk from Cli or Workbench you will see a set of gadgets with the available drives on the top of the window. Choose the desired drive by clicking it's gadget. If the chosen drive is a 3.5" or a 5.25" drive you will be asked to insert a disk. Now the program starts to read in the disk, cylinder by cylinder searching for file/directory headers. When the disk has been examined, a file requester on the left half of the window. The first column shows the 'key' (the block number where the file header has been found), followed by 'DEL' for deleted files or '---', followed by the filename. Red entries are directories.

The right of the window holds seventeen Gadgets. These are gadgets that will write onto the disk. To enable them you have to choose 'Write enable' from the single 'Miscellaneous' menu.

THE GADGETS:

Directory - Parent:

Read parent directory.

Directory - Root:

Read root directory.

Show - Selected:

Shows a file in Hex or ASCII. Like all other commands, the file is processed without using DOS, but each sector (block) is read in, checked and displayed. Use this function to see what remains in a defective file.

Check Files - Selected:

This function checks the selected files.

Check Files - Deleted:

Checks only deleted files, so you can see which one can be undeleted.

Check Files - All:

Checks all files.

Undelete Files - Selected:

Undeletes selected files.

Undelete Files - All:

Tries to undelete all deleted files.

Copy Files - Selected:

Works like 'Show' (see above).

Copy Files - All:

Copies the entire disk, trying to recover as much as possible.

Wipe Files - Selected:

This function clears the file header of a deleted file. Utilities like Diskdoctor or DiskSalv will try to recover all files, even if they have been deleted. If you don't want some files to pop up again using one of the programs above, you may use this function.

Wipe Files - All:

Purges all deleted files.

Delete - Selected:

Deletes a file, i.e. the file header will be taken out of its hash chain, and the bitmap updated.

Delete - Faulty:

Checks all files and deletes those with errors. The program may ask you before deleting a file, if you wish.

Info - Device:

Returns some information about the selected device.

Validate - Disk:

This is not the Amiga Validator, but the programmer's own. The main difference between them is that this one tries to repair the disk structure.

Recover - Track:

This function tries to get as much as possible from a defective track.

THE MENU

There are only two menu items:

Ignore readerrors:

Usually you get a requester asking 'RETRY' 'IGNORE' if an error occurs. This may be very annoying if the disk has a lot of defective tracks. This item will stop that requester popping up.

Write Enable:

Enables those gadgets that will write onto the disk.

FixDisk is a versatile program that is considerably more powerful and user-friendly than the Diskdoctor supplied with your Amiga. If you value the data on your disks, make plenty of backups and get a copy of FixDisk - then you can breathe a little easier!

FixDisk is to be found on Fred Fish Disk 223.

This month's programs were supplied by:

Softville PD Service, 55 Highfield Avenue, Waterlooville, Hants PO7 7PY. Tel:(0705) 266509.

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WORDS OF TWILIGHT

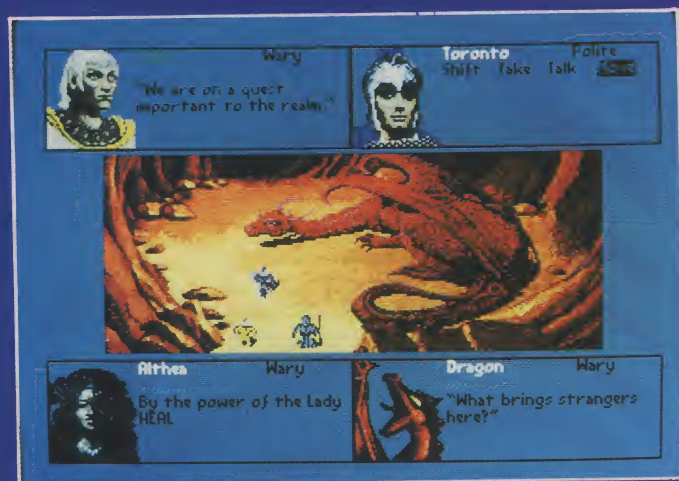
After three years in development have Electronic Arts produced the Ultimate Adventure or is it 'Nice idea shame about the game?' Andy Moss checks it all out

I read it in the opening paragraph of the manual. There it was right under the heading.. 'Swords of Twilight offers you an extraordinary opportunity to eat, sleep, explore and learn, meet interesting people, talk, fight and have complete freedom of action'. Well, that is hardly state of the art now is it? Let's face it, what else is adventure if not those

"SWORDS has been written for up to three players to participate in at the same time, and is the first RPG to do so with any real purpose behind it."

actions described above! It went on to say that this game is so startlingly realistic that 'short of first degree burns it is the closest you will get to a Dragons breath.'

I was starting to have a nasty feeling about this, was it all going to be a typical hyped up marketing ploy after all?

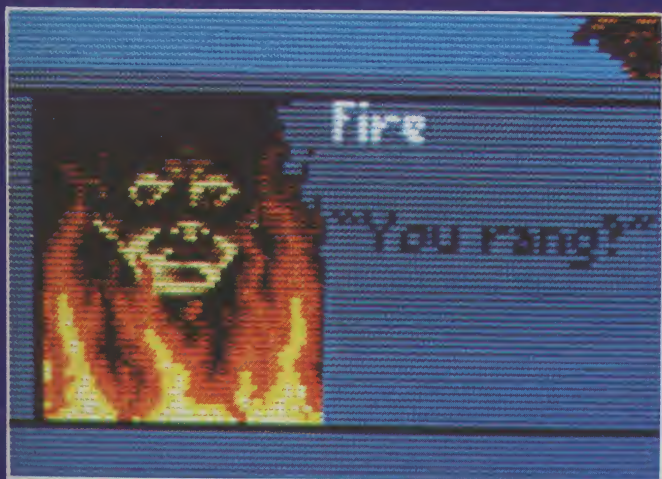


Incidentally SWORDS has been written for up to three players to participate in at the same time, and is the first RPG to do so with any real purpose behind it.

The game owes some of its look to Gauntlet/Ultima in the overhead room to room exploration of buildings, whilst outside, the familiar scrolling landscape technique of current RPG's is used. The actual

"The authors call them stubborn, easily distracted and say that they will constantly get in the way, and that you must put up with their quirks as they will defend you with their lives."

game screen is divided into five windows, and one of the first three windows shows the face, name and current mood of the character that you are playing. The other two depict your comrades in arms, which



in my case were computer controlled as I was playing it solo. The middle window is the main action area, and all movement is shown here, and the fourth window is reserved for anyone you meet along the way.

The style of the adventure is such that all text such as dialogue, inventory, and actions is shown

"You are reasonably equipped, and the good Queen will provide you with extra provisions each time you visit her."

alongside the character graphic inside the relevant window. Now, this is where the new style techniques are used, as each character, although led by you and your actions, is an independent person who will move talk and fight without your help, and converse with other people before you manage to get a word in! In short, they are as frustrating as real people. The authors call them stubborn, easily dis-

As a seasoned and somewhat cynical computer observer, there has been many a time a new game has been heralded as 'a new chapter in computer entertainment' or (that terribly inexact word) the 'ultimate' only to in fact be nothing more than a huge disappointment. So it was with some trepidation that I awaited the opening sequences of SWORDS, which turned out to be actually the opposite, bar a few annoying things.

tracted and say that they will constantly get in the way, and that you must put up with their quirks as they will defend you with their lives. In other words, the programming time had run out!

Your colleagues are each programmed to react in a different way, and at the start you get a choice of over 30 to choose from, ranging between Knights and Mages. That done you start the adventure in the Hall of Queen Gloriana's castle, deep in the heart of a land called Albion. You are reasonably equipped, and the good Queen will provide you with extra provisions each time to visit her.

Your quest is somewhat shrouded in mystery, but ultimately you need to find Baleblade, the Sword of Aggression, in order to free the land from the

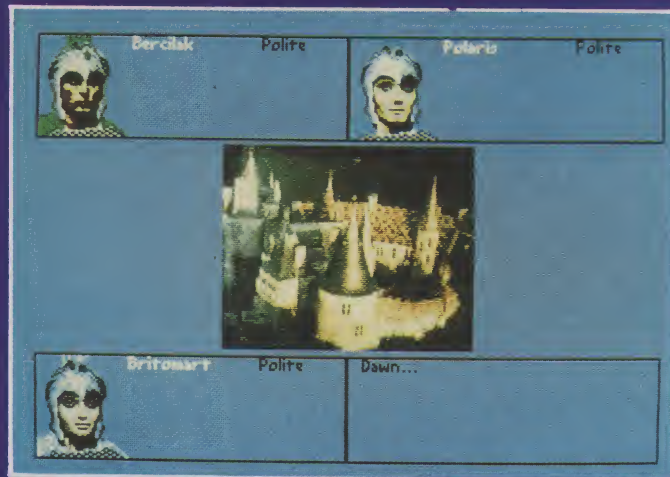
Shadowlord. Along the way you will find useful items, or be given magical equipment, providing that you learn how to converse properly. This is one part of the game I found tedious. By pressing the fire button, a series of menus appears giving you a number of choices, and you highlight the appropriate action that you require. This all very well in theory, but when a character asks you a question

"And as you progress you will find stronger and stronger foes to overcome"

and you have to shunt through three different menus before finally finding the correct response, you find that it took so long that another character has answered in your place! Not only that but the response times for getting your questions answered can become a tad lengthy, particularly if the character you are addressing decides that what you are saying is not important.

The authors, who previously brought us Archon I and II have tried to make the game run as realistically as possible, it is in fact a dynamic scenario, in that castles fall into ruin, objects dropped may be moved, there is night and day, and you have to eat, sleep and fight. And as you progress you will find stronger and stronger foes to overcome, from a rather gentle opening, where you get to explore Albion at your leisure to a pretty fierce confrontation later on in another World.

Plenty of Magic spells are available to all would



be wizards, and there are more than enough chests to open to find who knows what. My reservations? Apart from the laborious conversation mode, I did not like the encounter routines. Rooms which one minute are empty, suddenly acquire occupants, and you have to endure the talking routine all over again, in order to continue on. Similarly outside, the characters are read in from disk on screen instead of loading them whilst the game is scrolling. It rather diminishes the authors attempts at realism.

That apart though, SWORDS OF TWILIGHT is a user friendly role player that brings us a new and commendable approach to adventuring. Highly recommended.

A.M.

Price: £24.95



Here at *AUI* we understand our reader's innermost fantasies. That is why we have got together with Electronic Arts in order to make your dreams come true. That could be through their newest release 'Swords of Twilight' which Andy Moss highly recommends. We are now giving you an entire **FANTASY ROLE PLAYING** weekend based around "Swords of Twilight".

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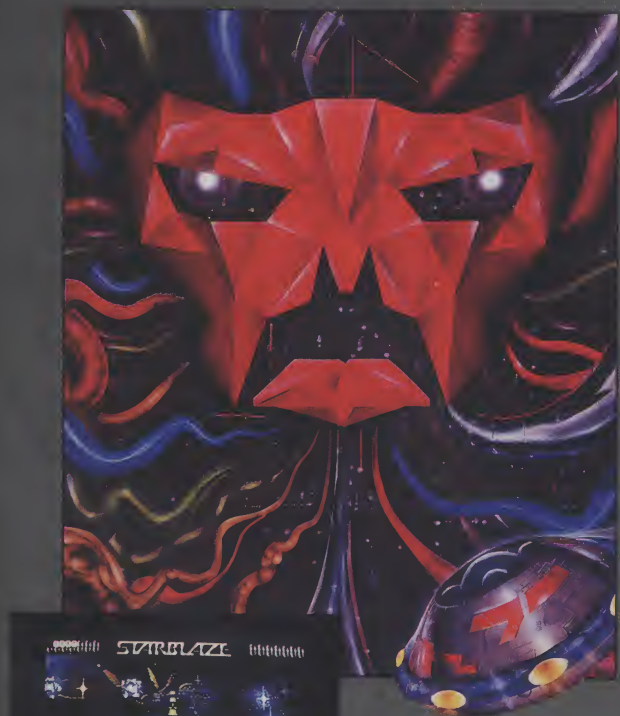
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Batman The Movie

Ocean

Is it the monitor screen's greatest gift or just another hyped-up flop? Tony Horgan examines the biggest title around.



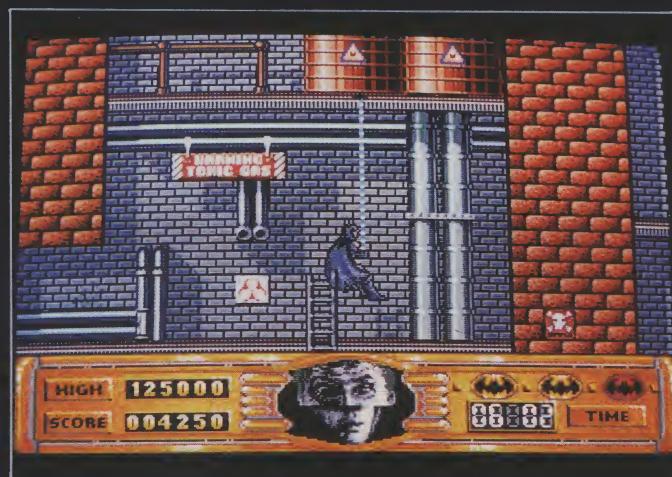
Once again the multi-stage movie tie-in format, pioneered with *Platoon*, is the chosen route for another of Ocean's big name celluloid to binary conversions. Five extremely varied stages take you through the film, charting the rise and fall of The Joker.

Scene one then, begins in the chemical plant. The police seem to have vacated the area, so you are forced to take on Jack's gang alone, before confronting the ringleader. His henchmen are all armed, some with guns, others with grenades. Batman is not into guns, instead he prefers to use his tranquilizer-tipped batarangs. Overhead walkways can be reached by the ladders, but that's too slow a method for the dynamic Batman. His party piece involves shooting out a grappling iron and winching himself skyward. He also does a good Tarzan impersonation, using a similar technique to swing across gaps in the platforms.

The upshot is a game similar to Capcom's *Bionic Commando*, although a few games of said coin-op were enough to convince me of Batman's inferior gameplay. It's fun, messing around on the batropes, but there are not enough opportunities for spectacular rope swingery. One other point I must raise is the

chronic shortage of restart positions. After a death you are often put back way too far. Is there really any reason for not restarting where the player was killed? Much gnashing of teeth later, you'll knock Jack into a vat of toxic chemicals, transforming him into The Joker.

Moving on a little, stage two has you in the driving seat of the Batmobile, on the run from both The Joker and a confused police force. Completely different to the first stage, the game now looks and sounds more like *Chase HQ*. There are three factors



to monitor as you motor along the streets of Gotham City. A counter displays the distance to the Batcave, another displays the time remaining, and the third reports on the damage suffered by the Batmobile. An arrow at the top of the screen indicates when to take one of the many turn-offs. The Batmobile is travelling so fast, that to corner so tightly would normally be impossible. Out come the batropes again, this time hooking on to lamp posts on the street corners. Time it right and the batrope will see you round the corner in one piece, without a loss in speed. Miss three turnings on the trot and you'll find yourself careering into a police roadblock.

The speed of this section is amazing. The time



Batmap first level



limit is offset perfectly against the distance, demanding you drive flat out the whole way. As in Taito's car chase coin-op, taking the humps in the road at

The movie-makers chose to tell the story of The Joker a little differently to that of The Killing Joke graphic novel. In the latter, Jack Napier was a poor man, unable to feed his wife and child, who in desperation was led astray by a gang of criminals. In the movie he is a bad egg from the start. Whatever the background to it, Jack found himself in the middle of a bodged raid on the Axis chemical plant, of which somehow the police had got in the know. The police, Jack could handle, but who was this winged vigilante?

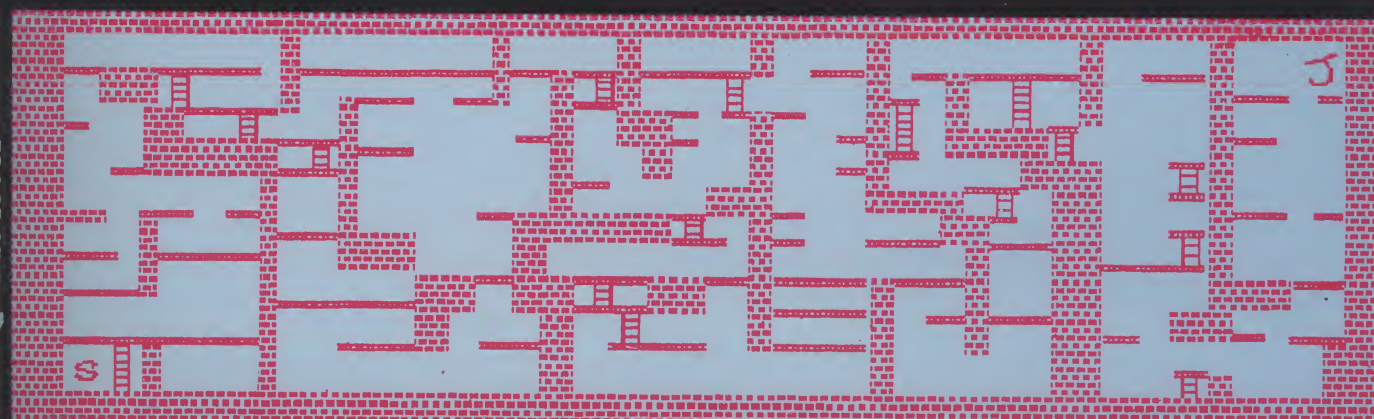
top speed launches you from the tarmac, which has the adverse effect of a momentary loss of control. This brilliant stage more than makes up for the first's

imperfections.

The batcomputer always featured prominently in the TV series, if not in the comics, and it has its part to play in the game. The Joker has spiked a number of cosmetics with his own deadly cocktail "Smilex". You have a number of products which could contain the poison, but you have to work out for sure which of them do. This sub-game plays along the lines of Mastermind, as the computer can tell you how many of any selection are poisoned, but not which ones.

A second 3D stage is next. The Joker is holding a carnival to mark Gotham's 200th birthday. The people of the city cannot believe their luck when the insane villain showers the crowds in cash, but Gotham's greed is about to lead to its demise. Inside the innocent looking balloons is Smilex gas, with which The Joker intends killing the unexpected merry-makers. If you could find a way to break them from their moorings, they would float away with the gas dispersing harmlessly in the atmosphere. The

Batmap first level





answer is to slice through their guy ropes with the Batwing. Burst or miss too many and the city is doomed. A more drastically undulating road makes your task even more difficult.

It's back to the platform theme for the final stage, set in the cathedral. The scene plays very much like the first, but you now have the added incentive of saving your heart-throb Vikki Vale from The Joker's clammy clutches.

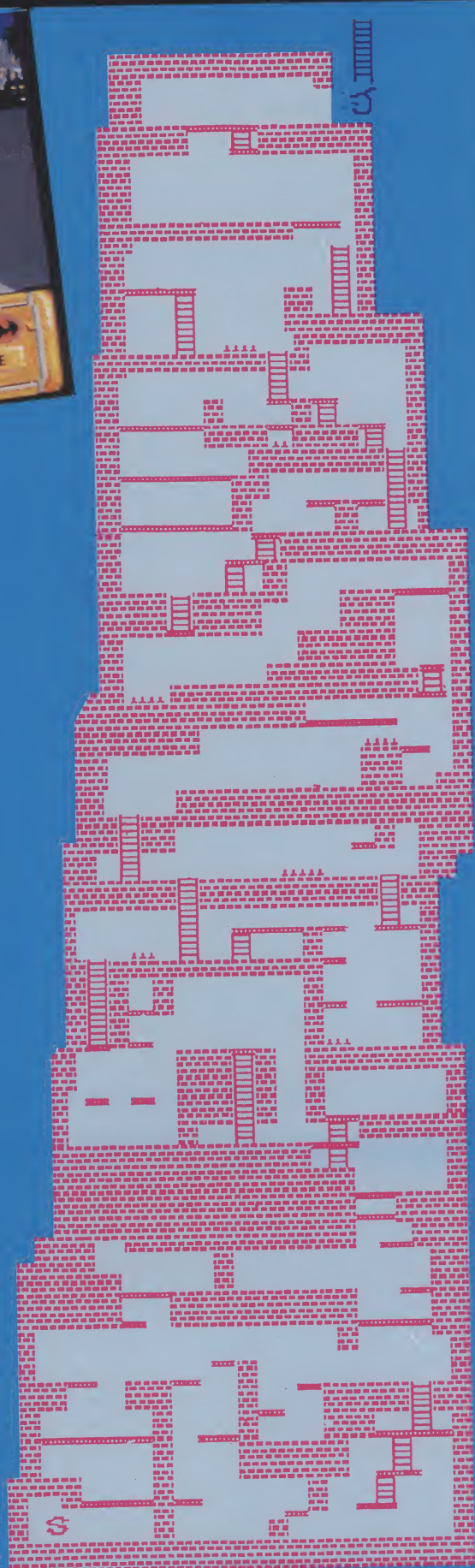
Three artists are credited for the game's graphics, which is not surprising. The title screens and peripheral stills are all superbly drawn, especially The Joker portrait on the game over screen. However, the platform-based levels are some way behind those standards. The scrolling in these sections is ever so slightly off perfectly smooth, and the faint afterblur can strain the eyes before long, although that's the programmer's territory rather than the artists'. In contrast, the 3D sections are very impressive, thanks to excellence in all departments.

I would have liked to have heard a more adventurous soundtrack. Jonathan Dunn's music is pleasant, but there's work to be done if he's to keep pace with some of David Whittaker's recent pieces. Still, the sound effects are good throughout.

Without a doubt, the 3D sections are the star attractions. Not only are they the most spectacular, but they also play a lot better than the rest of the game. The theme of the first and final levels has not been exploited to the full. Had they been less frustrating, with a little more variety in the hazards, they would stand up better on their own. As they are, they need the strength of the remaining sub-games to pull them through. I wouldn't accuse Ocean of inadequate playtesting, as I've seen the game refined in a number of ways since its conception, but there are a few small points I would have altered, which would have raised the game higher still in my opinion. Nevertheless, Batman is a great entertainment, and although the price is high, no-one could deny you get a pretty big game for your money.

T.H.

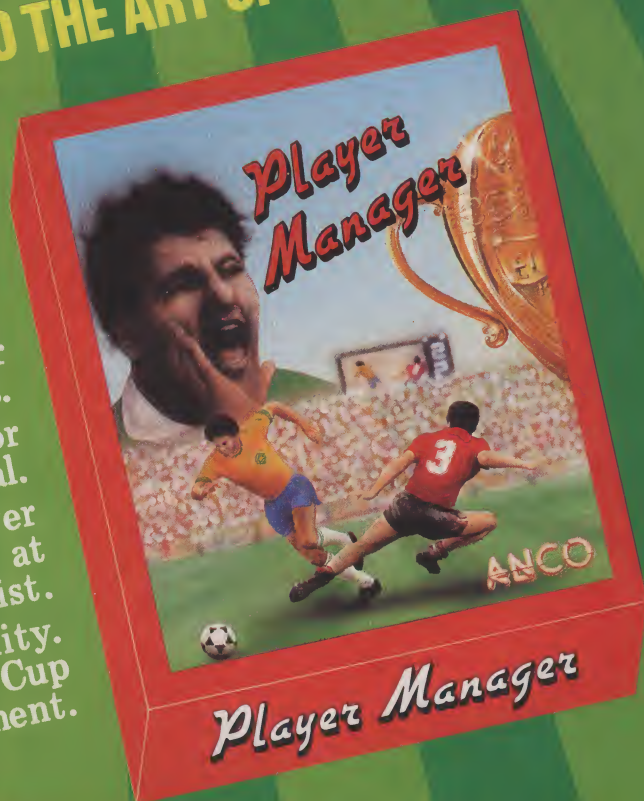
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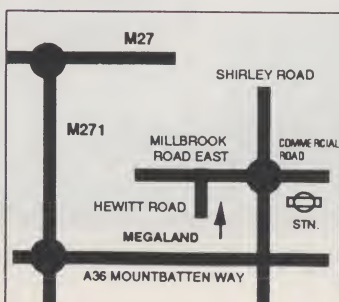
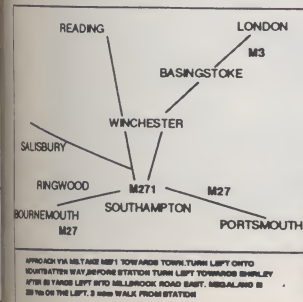
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Rock 'n' Roll

Rainbow Arts

It seems Rainbow Arts have had enough of cloning big name coin-ops. Rock 'n' Roll is one of the few original games to have appeared this month, although like most "original" games, it borrows ideas from a few well established favourites, but then Shakespeare did the same, didn't he? As I'm sure he said "It's not where you get it from, it's what you do with it!". Your goal in Rock 'n' Roll could not be simpler: find your way from start to finish of each level. The means by which you do so are far more complex.

Under your control is a spotted ball. Using the

mouse, you can roll it around the multi-directionally scrolling levels with pinpoint accuracy. These precision controls are essential, as the pitfalls are often only pixels apart from the necessary collectables. Most of the time the level's exit is out of sight, so knowing which direction to head for is sometimes a problem. Locked doors are the most common obstacle. These are all colour-coded, and so can only be opened with a key of the same hue. They take care of the bulk of the gameplay, whilst additional problems are introduced occasionally for a bit of variety. Repair kits can be used to fill in holes in the floor, a





temporary tough outer-shell allows you to smash through weak walls, and spikes counter the effects of icy patches. There are also loads of other little gadgets and terrain variations, such as bombs, crumbling platforms, teleports, hills and magnets.

Usually a game will do one of three things after you lose a life. First, it could put you back in exactly the same place that you died, but this can lead to the "Jet Set Willy syndrome", where you are thrown into an unavoidable deathtrap each time. A similar method is to do the same, but also give the player a few seconds of invincibility. The third option is to put you back to the start of the level, which can be extremely annoying. Rock 'n' Roll sensibly gives you the choice of either restarting where you left off, or returning to the start of the level.

Rather than rock and roll, the in-game music is a collection of forgettable pieces, which at best refrain from irritation. Although the graphics are far

from spectacular, there are some attractive details. The ball rolls properly, instead of sliding around, and the parallax scrolling of the lower level is neatly executed.

Rock 'n' Roll is a very pleasant game. It's fun in short periods, and calls for both mental and mouse-



handling skills, in a kind of puzzle-orientated Marble Madness. It's also quite relaxing, which can make a nice change if you feel like winding down from a high speed zapping session. With so much competition around at the moment, it wouldn't be my first choice, but it's well worth looking into.

T.H.

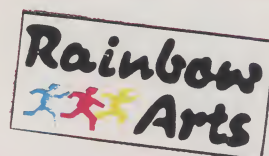
Graphics: 6 Sound: 5 Playability: 5
ABSOLUTE VALUE: 5 Price: £19.95



WIN! ... WEMBLEY! ...



WOW!



SEE PAUL McCARTNEY IN CONCERT!

Rock 'n' Roll, the latest release from Rainbow Arts good time boys looks all set to put a few mellow vibes rushing through your monitors. SO...here at **AUI** we said to ourselves here's yet another chance to offer our readers the opportunity to **WIN WIN WIN!**

And **WOW!**, have we pulled out the stops this time! The Sex, Drugs & Rock 'n' Roll all time mega star Simon "Sideburns" Harvey slapped his brain into gear and P.R. Kingpin pulled 6 tickets for the Paul McCartney concert at Wembley Arena in January 1990! All of these **HAVE** to be won exclusively by **AUI** readers!

All you have to do is answer the following questions ...!

1. What form does the main sprite in Rock 'n' Roll take?
2. What is the name of the famous club that the Beatles used to play in Liverpool?
3. In no more than 15 words complete the following sentence:
"I would like to run naked through a cornfield with Paul McCartney because....."
(Printable answers only please!)
4. Name a song written by Paul McCartney.
5. Name a computer game with which Paul McCartney is associated.

Answers on a postcard please, to be with us by January 5 1990.

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The game is set over many hazardous and alien ridden levels which must be completed in order to save Zeus' daughter, Athena. You will encounter a number of rather nasty creatures that can be killed with a swift kick or punch. Later in the game you can transform into various beasts which have their own special powers to make you that little bit more resilient.

The screen scrolls relatively smoothly from right to left, with aliens dropping in from every direction. You can play alone or together with a



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HYPERTORCE



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Blistering Stuff Hyperforce is a wicked arcade game challenge with over 30 levels of hectic, wrist twisting, finger bending action. With stunning graphics and sound, it's probably the nearest a home computer owner can come to arcade action without putting coins in a slot!! Warning Addictive Games would like to point out that no one should attempt Hyperforce without first warming up their game-playing skills. For this reason every pack also includes a FREE WARM UP KIT - "ARTIFICIAL DREAMS" - a shoot-'em-up with a MEAN catch 22 twist. SORT THESE TWO OUT, AND YOU'RE PROBABLY AS GOOD AS YOU THINK YOU ARE!!

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Continued from page 33



friend, however when I played a game of doubles I found it a bit confusing trying to make out who I was, because both players are identical.

Rocks and pillars are scattered across the levels and can be smashed out of the way quite effortlessly giving great satisfaction.

As in most games these days, there are end of level guardians that take a bit more effort to destroy than usual. The only thing is that it's not hard to kill them but just takes a lot of time and can get a bit boring doing the same move time and time again.

Although the graphics are very large, they are

badly defined and move around the screen rather unconvincingly. The levels do however, look quite bright and colourful.

Music on the title screen, and throughout the game is well suited and the sampled speech adds to the games atmosphere. Sound effects are plentiful and very realistic.

The trouble with *Altered Beast* is that the format is a tried and tested one, and the gameplay just isn't different or original enough to make it stand out. You find yourself doing all the same things on all the levels, and there isn't enough variety to keep you coming back for more.

D.H.

Graphics: 6 Sound: 8 Playability: 5
ABSOLUTE VALUE: 5 Price: £24.95



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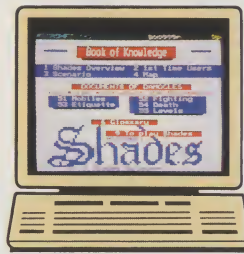


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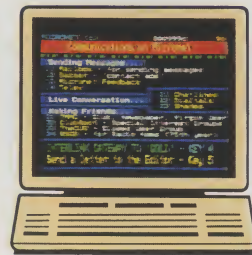
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Beach Volley

Ocean

Fancy a bit of a change? Getting bored with your old footie simulations? Then why not try your hand (sorry!) at Beach Volley?

It's the first of its kind to appear on the Amiga, and I doubt it will be the last. The game is quite straightforward, just a simple two on two game of volley ball playing with a friend or against the computer.

The idea of the game is to defeat your opponents and progress to the next destination. There are eight

different destinations to meet as you travel around the globe, the first being London. A nice little view of the Houses of Parliament and two of the Queen's Guard sets the scene. You take on a side view of the screen as the action scrolls from left to right with the ball. The pitch consists of a large rectangle with a net in the middle but no markings. Each team is





allowed three touches before it goes back over the net, and the winner is the first to score seven points.

You do have to be quick, because if you start showing off those beautifully tanned muscles, the time limit will run out and your game over. Even if you are ahead on points, if the time limit comes to an



end, you lose the game. This can be extremely frustrating, especially when you are leading eg 6-4.

The game itself is challenging, nay undefeatable, even without the time limit, so it's no wonder that it took the best part of five hours to progress from the first level! The game would have been better if it started off easier and got harder as you went along.

The use of colour and graphic detail is excellent throughout. The cartoon sprites and imaginative

backgrounds add to the games playability. There is a certain amount of addiction involved as you are always anxiously awaiting the appearance of a new stage.

The music is also well suited to the game. Each time you reach a new location a different ditty will accompany you to get you in good spirits.

Beach Volley is certainly more interesting than your usual shoot 'em up and can be very addictive. Great fun if you have got time to stick at it long enough.

D.H.

Graphics: 9 Sound: 8 Playability: 8
ABSOLUTE VALUE: 8 Price: £24.95





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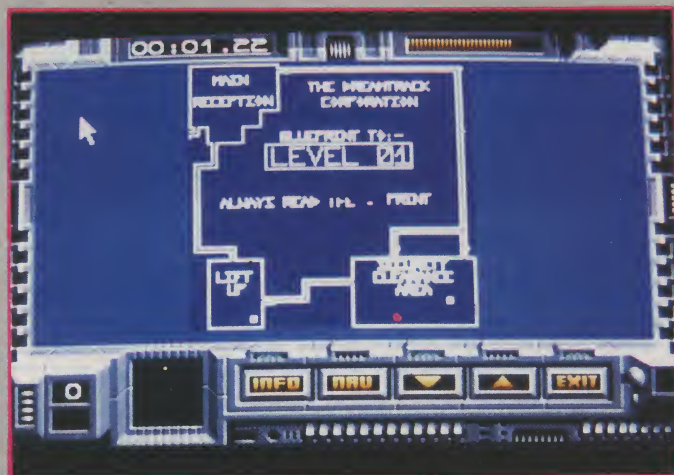
Interphase

Image Works

The scenario fronting *Interphase* tells of a time-zone in which all of today's forms of entertainment have been replaced by one of man's biggest scientific breakthroughs. The eggheads of the future have found a way of recording dreams onto CDs. Hook yourself up to your dreamplayer, and your brain will think it is actually experiencing your actual dream of fantasy. All was going well, until the powers that be cottoned on to the potential brainwashing qualities of these dreamtracks. One of the dreamers, employed as a source for the dreamtracks, has realised that his latest recording contained serious political propaganda, which would end up influencing the population if it were put on general release. Chadd, the dreamer, has decided that he must break into the highly secure Dreamtrack Corporation building, and get hold of the master track before it is duplicated.

It's a nice idea, but the dreamtrack has little relevance to the game itself; and what you are supposed to be finding has no bearing on how you find it.

Because of the extreme security measures taken by the corporation, you've enlisted the help of your girlfriend. She'll be the one entering the building, while you hack around with the computer, disabling each security system as she goes. However, hacking the computer is not a matter of finding logon codes and passwords. Instead you are given a "ship", in which you fly around the computer's innards, adjusting and destroying the relevant chips and components.



nents.

The computer holds blueprints of each of the building's floors, detailing the many varied surveillance and termination devices. These plans are stored as 2D vectors, views of which can be zoomed in and out, as if on microfiche. The positions of the girls sends you a message telling you what she's up against. The obstructions come in three varieties: two-state objects, such as doors which can be open or closed, multi-state objects such as turntables, and exits to higher levels, which you must activate. Each obstruction is controlled by a component in the computer. By programming your tracking device, you can locate the component. Multi-state objects have components which must be docked with, and then changed from inside.

Forethought is essential. Simply taking things as they come will lead you into trouble from the start. The girls will walk through a door as soon as it opens, so if there happens to be a camera on the other side, she'll soon be on the receiving end of a robot's laser beam. You can take this forward planning as far as guiding robots into traps, thus disabling them and clearing the way for the girl.

Of course, each level is more complex than the next, but the basis of the gameplay remains constant. Wait for the girl to reach an obstruction, locate and take out any traps which follow on directly, then deal with the obstruction in hand. Tracking down the components in the solid 3D section is not much trouble, but you are hampered at all times by the

computer's anti-virus and security check routines. These are symbolised as alien ships, some of which could have come straight out of Starglider II. Others, such as the unicycling frogs, are rather more original. These are all displayed in some of the fastest filled 3D vectors ever seen on the Amiga. You also get a clever "haze" effect, with objects increasing in brilliance as they approach. This does however lead to a lot of alternate-pixel shading, which detracts a little from the otherwise realistically solid look.

Apart from a drum beat borrowed from the intro of FYC's "She Drives Me Crazy", there's no music. The effects consist mainly of laser fire and explosions, none of which is outstanding, but they fulfill their role well enough. And when we saw the early versions, the photo of your girlfriend was that of the luscious Cathy Campos, Microsoft's PA Princess. Why have they substituted a much less attractive picture?

This would all add up to a long-lasting and involving game, if only there was some way of skipping the levels which you have already completed. The 3D flight sections call upon arcade skills, but the core of the game is its adventure/puzzle elements. Once you've worked out and passed a level, doing all time and time again to reach the higher levels is extremely tedious. It's obvious from the original design and excellent programming that a lot of effort has gone into the creation of Interphase, and it's a real shame that the omission of such a simple feature as a game-save or password system



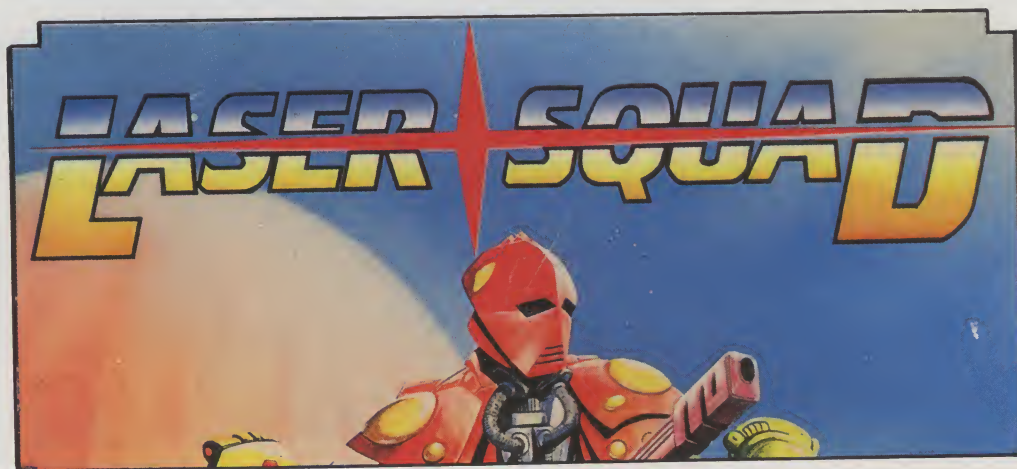
brings it down.

I would guess the playtesters and programmers used a cheat version to allow easy access to the later levels, and possibly only played it a few times in its final state. Otherwise I cannot see why such a system was not implemented. As it is, Interphase will have you engrossed for a day or two, but few will have the patience to venture much deeper.

T.H.

Graphics: 8 Sound: 6 Playability: 6
ABSOLUTE VALUE: 6 Price: £24.99





Blade

There are five scenarios available, with further scenario disks promised. Whilst the game combat system remains the same throughout, each scenario is distinctly different from any other. There are different landscapes and terrain features, a variety of weapons, some of which are unique to certain scenarios. Your squad has varied strengths and weaknesses.

Despite the availability of a one player option, complete with multiple levels of difficulty - as many as seven on one scenario, Laser Squad is at its best when played by two players, and it is a pity a datalink mode could not have been incorporated.

In two player mode, one player controls the rebels (good guys), whilst the other commands the forces of evil in all its various guises, ranging from your run-of-the-mill Storm Troopers, to the more exotic Venomous Splurges and Sectoids. Before combat can commence, the players have the opportunity to visit the stores and the armoury, where armour and weapons may be purchased - finances permitting of course!

You start each game with a limited amount of cash, and whilst you may be able to find some items strewn around the landscape during play, it is important to make your initial selection with the utmost care as the whole outcome of the game often depends upon this section.

At the next stage the Rebels get to deploy troops at certain pre-defined zones around the map. The enemy may or may not be given this option, dependant on the scenario being played.

Having dispensed with the formalities, it's off to battle where the game-proper can begin. The landscape is viewed via a window taking up most of the screen. In scanner mode, the entire map is displayed, but in normal and fire modes, only a very small highly detailed section is visible.

The vast majority of the action is dependant upon the strength and stamina of your characters, and these attributes are represented by movement points.

Each action, from changing weapons, to wading through swamps, requires a certain number of movement points. Run out of points and you're helpless until the next round. Various things such as

fatigue and fear, take their toll on your movement point allocation, which gradually decreases as the game wears on, hence actions which were easy at the beginning, may be impossible toward the closing stages of a conflict.

Firing involves two stages, first you must select the firing map and align the cursor with your target, then you have to select the type of shot that you wish to make. Again, movement points come into play here because each type of shot requires different points to attempt and has a specific percentage chance of success. The easiest, and hence cheapest type of shot, is Automatic fire, which behaves rather like shooting a machine gun at someone - it is not very accurate, but if you let off enough rounds you are bound to hit something. The most expensive and accurate shot, is the Aimed shot. Should you finish a round with more than half of your movement points remaining, you might have the chance to use opportunity fire. This comes into play when an opponent crosses your line of fire during their movement phase. If this happens, control reverts to you, and you may take as many shots at them as your movement points will allow.

In summary, the graphics are adequate during gameplay, and there are some well drawn pictures introducing each level, with an impressive animated title screen. A nice modern introduction, and excellently atmospheric game tune, combine with numerous spot sound effects throughout play, to create an aurally pleasing result.

The combat system is among the most exciting I've used, allowing for some very sophisticated strategies to be employed if you so desire.

With each game lasting several hours, and the release of further scenario disks, Laser Squad certainly offers great value for money to fans of the wargame genre, and I'm convinced that many people who have previously considered wargames to be too boring, will find themselves pleasantly surprised by this highly playable release from Blade. Laser Squad is a lot more fun to play than any wargame I've encountered.

M.B.

Graphics: 6 Sound: 8 Playability: 9
ABSOLUTE VALUE: 8 Price: £24.95

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M.B.

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APB

Tengen

If you're well up on American cop shows or the Atari coin-op, you'll know that APB stands for All Points Bulletin. If not, you do now. The arcade original is a chuckle-worthy cops 'n' robbers game, full of typical Atari jokes and a liberal smattering of addictive gameplay. What's more, it's a simple game at heart, with none of those rotational 3D graphics that have begun to make an appearance in the arcades. Surely a snip for the Amiga to emulate?

The game can take a while to suss out, so the beginner's training level is a great help. Round the back of the police station, the car park serves as a mock-up of the city streets. You're given a quota of two traffic cones, which must be arrested before the day is out. As you pull away, a small sight represent-

"Road blocks (through which civilians drive unscathed) limit your exploration, as do wooded areas on the edge of the city."

ing your siren moves to the front of the car. Activating the siren when it is over an offending cone or criminal arrests it. A quick tap of the fire button is all that's needed to activate the siren on the coin-op. The Amiga version is very slow to respond, and demands you press and hold the button long before your target is lined up. Once you work this out, the quota of two cones is no problem and you'll soon be out on the streets with the big boys.

Each day you are given a quota of litterbugs, honkers and other minor criminals. Once the allot-

ted number have been arrested, you receive a message from HQ telling you to return to the station. From time to time you'll be told to bring in a particularly dangerous criminal, who needs to be rammed off the road and brought back to the station for questioning. Questioning entails throttling the offender until he confesses.



While you're doing the rounds, you may like to pick up a few bonus points, extra time or a fuel top-up from the doughnut shops, garages and shops around the town. Road blocks (through which civilians drive unscathed) limit your exploration, as do wooded areas on the edge of the city, but you're pretty much free to go as you wish.

An effort has been made to enhance the Amiga version from its ST source. The scrolling covers the whole screen (with vertical overscan) and even the status panel is translucent, so as not to reduce the game area. Unfortunately, the scrolling is jerky and the controls very slow to respond. Bad scrolling doesn't necessarily detract from the gameplay, but unresponsive controls definitely do. It's a shame, because with many of the arcade's sound effects and speech included, APB is almost a very pleasing conversion. Without such refinements, APB is only going to appeal to the hardcore fans of the coin-op.

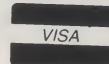
T.H.



Graphics: 6 Sound: 7 Playability: 6
ABSOLUTE VALUE: 6 Price: £19.95



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North And South

Infogrammes

North and South is Infogrammes wargame simulation of a piece of American history. Andy Moss finds out what it was like to be General Grant

The American Civil War. One of the bloodiest times in the history of America, where families were split, brother fought brother and sons fought fathers. At the end of four years of bitter fighting, over 600,000 had perished, and although the Southern States were in ruin, millions of black slaves were given their freedom. For tacticians and war historians, the Civil War was the first modern armed conflict that utilised new weaponry, trains and sea blockades, and provided many a budding general with some fascinating new military manoeuvres. Infogrammes, not normally known for producing war simulations, (that is usually the domain of SSI or SSG) have attempted to recreate the whole scenario on computer but using a light-hearted approach, which borders more on amusing entertainment than true historical accuracy.

I initially found it very distasteful, that such a serious and tragic part of history should be dealt with in this way, but when you consider that it is based on a very famous French comedy comic strip series entitled *Les "Tuniques Bleues"* which currently has sales of nearly nine million to its credit, you might warm to the idea.

In **NORTH AND SOUTH** you can elect to play either side, the Confederacy (South) which has fewer men and equipment, or the Union (North) with the ultimate objective being to eliminate all the enemy armies. The game caters for one or two players, and their respective skill factors can be accounted for in choosing either Captain or Corporal levels, the difference being that the arcade sequences will be easier or harder according to their rank.

You can also allow for disasters to happen, which are key elements in the comic books, such as Indian attacks, Mexican uprisings, and storms, which hamper movement. Play is centred around game turns, and most of the strategy is depicted on the main map screen showing North America. Obviously at the start of the game all the armies are positioned in their respective towns waiting for the signal that hostilities are to begin.

Each player then moves their respective armies

into territories that the strategy decrees, and by experimenting between defence and attack you can quickly work out a winning plan.

The battle graphics comprise of some fairly small sprites on horesback and on foot, together with up to three cannon, facing each other in a field, not dissimilar to the battle sequences in Cinemaware's *Lords of The Rising Sun*. Victory has you taking over ownership of that area, and holding it until the next melee. There are two other arcade sequences, one is the taking of a fort (some areas have forts in them



and these have to be taken before the territory is won) and consists of one soldier running along a scrolling wall dodging explosives and fighting off other soldiers, finally to reach the flagpole where your flag colours are raised. The other sequence is a chance to rob the enemy's gold train, thus cutting off essential supplies, and again entails a soldier to run the length of the train, dodging all sorts of things to finally get to the driver.

It is all a light hearted romp without much variation in play, and my worry is that after a while the lack of real depth to the game will shorten its playing life considerably. Short term though, its quite fun and you get a few laughs in the bargain, but do not expect a War and Peace epic.

A.M.

Price: £19.95

BATTLE VALLEY

HEWSON

DON'T PANIC! The US Government have a rather special assignment for you. They want you, as a mercenary, to sort out some really nasty terrorists. As the story goes, a peace treaty has been signed, which has abolished all medium range missiles, except two which have been stolen by these darstardly terrorists.

With these missiles they plan to hold the western world to ransom, threatening to blow us up if we do not release their fellow terrorists held in prison in the US.

Your mission, should you wish to accept, is to capture the six terrorist bases in the desert, there are three in either direction from your central H.Q.. You must then finally destroy the two missiles in their silos located beyond the two farthest bases. All this must be completed before the clock count down reaches zero, the deadline set by the baddies who then launch their missiles to end civilisation as we know it.

Well, that's the scenario, let's see just how good the gameplay is. Originally, Battle Valley came out first on the C64, it was very playable and the graphics were of a high standard considering the limitations of the machine. Programmers, Creative Thought, have done a great job of converting to the Amiga. The improved graphics are impressive and do the Amiga justice. The scrolling is as smooth as a baby's bottom, scroll speed may also be adjusted, making control very precise. Sound effects such as explosions and engine noises are excellent. The title music is a little on the ropey side but does not detract from what is an otherwise



great game.

The missions start off easily enough but as you penetrate further and further into the defences of the enemy there are more and more obstacles to slow down your progress. You start from your central H.Q. with a choice of either tank or helicopter and may go left or right. The object of the exercise is to blow up the terrorist's gun defences on the way, clearing a path for later attempts. Your best bet is to take the helicopter first as you need to fly a long way to find the pontoons needed to repair some broken bridges so that you can utilise your tank fully.

Only the tanks are capable of blowing up the terrorist bases and the final objective, the missile silos, so it is important in the early stages to get the path cleared by your helicopter. There is no limit to the number of tanks or helicopters you can use, you may be blown to bits as many times as turns you on, the only limitation is the time factor.

The continual count down and the race against time makes this rather addictive. The more you play, the further you progress, the further you progress, the harder your task becomes. Although I haven't yet reached the final stages I am impressed with what I've seen so far. One day soon I will save the world, or will you beat me to it?

B.C.



Graphics: 8 Sound: 6 Playability: 7
ABSOLUTE VALUE: 7 Price: £19.95

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Roller Coaster Rumbler

HEARD IT ON THE GRAPEVINE

Hiding behind the vine leaves, Noddy - sorry - Tony Horgan, catches the rustles of the new games to come

Pricing has been one aspect of the Amiga games scene that I have never been happy about. Put aside £50 per month and you can still only afford two games! That's a hefty slice of any worker's salary, and completely rules out anyone still at school without an exceptionally well-paid part-time job (or a rich Dad or Lady friend). When the

computer game industry took off after the consoles had died out, a key factor of its success was that the software was affordable. School kids could save what little money did come their way, and buy a game once every week or two, without taking out a mortgage. As is generally the case now, people would buy what they could afford, and fill out their col-

lection with copies of friend's originals. With the current high pricing of Amiga games, there's an imminent danger that most will turn to piracy increasingly often, simply because they cannot afford more than the occasional original game.

16-bit budget ranges have been tried in the past, but even these carried a



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FIELD REPORTS

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HEARD IT ON THE GRAPEVINE

price of £9.95, the same as a full price 8-bit game. Mastertronic are the first to launch a range of budget games which are positively cheap, rather than just inexpensive. Games on the 16 Blitz label will sell for just £4.99. The first two releases are Speedboat Assassins and Kelly X, both of which are 3D shoot 'em ups. If the idea succeeds, it could be the start of a new wave of affordable Amiga games. But with the high costs of 16 bit game development that could also

Stunt Car Racer



Speedboat Assassins



to the test. Even the straights are hazardous, as the tracks are all built up several metres from the ground. Fast filled 3D from Geoff Crammond, the man who brought us Revs and Sentinel, has even been achieved with the 64 version, so hopes are high.

More 3D graphics are on the way from Microprose in the shape of Midwinter. Programmed by Mike Singleton's Maelstrom Software, it includes fast arcade sequences tied in with a wargame-style framework. Set in the future after a climatic disaster, the world has entered a second ice age. Conventional governments and power systems have broken up, and been replaced by hundreds of small "manors" dotted around the land. Yours is under threat from its neighbour, and the game charts your battle to save the community. Scenes involving hang gliding, snow buggies, cable cars and skiing will use similar "light-sourced" solid 3D techniques

bring the risk of lower quality products.

Slayer, which first appeared for the C64 on Hewson's Rack-It label is about to be released for the Amiga. It originally sold for £2.99 in its 8-bit guise, but the price has been bumped up to £19.99 for the Amiga version. The 64 game was well received, thanks to its smooth graphics and overall quality look and feel. First impressions of the Amiga version are not so good. The graphics have not been enhanced, and move with less fluidity. It seems over-priced, but a thorough play-test may prove otherwise.

A more promising imminent release is Stunt Car Racer. It's been around on the ST for a couple of months, but if anything the delay is good news, as it implies it won't be a straight ST port (although it could just be a clever bluff from Microprose!). Stunt Car Racer is a 3D race game, set around eight dangerous tracks. Including numerous humps and ramps, they put both driver and car

Kelly X



continued on page 100

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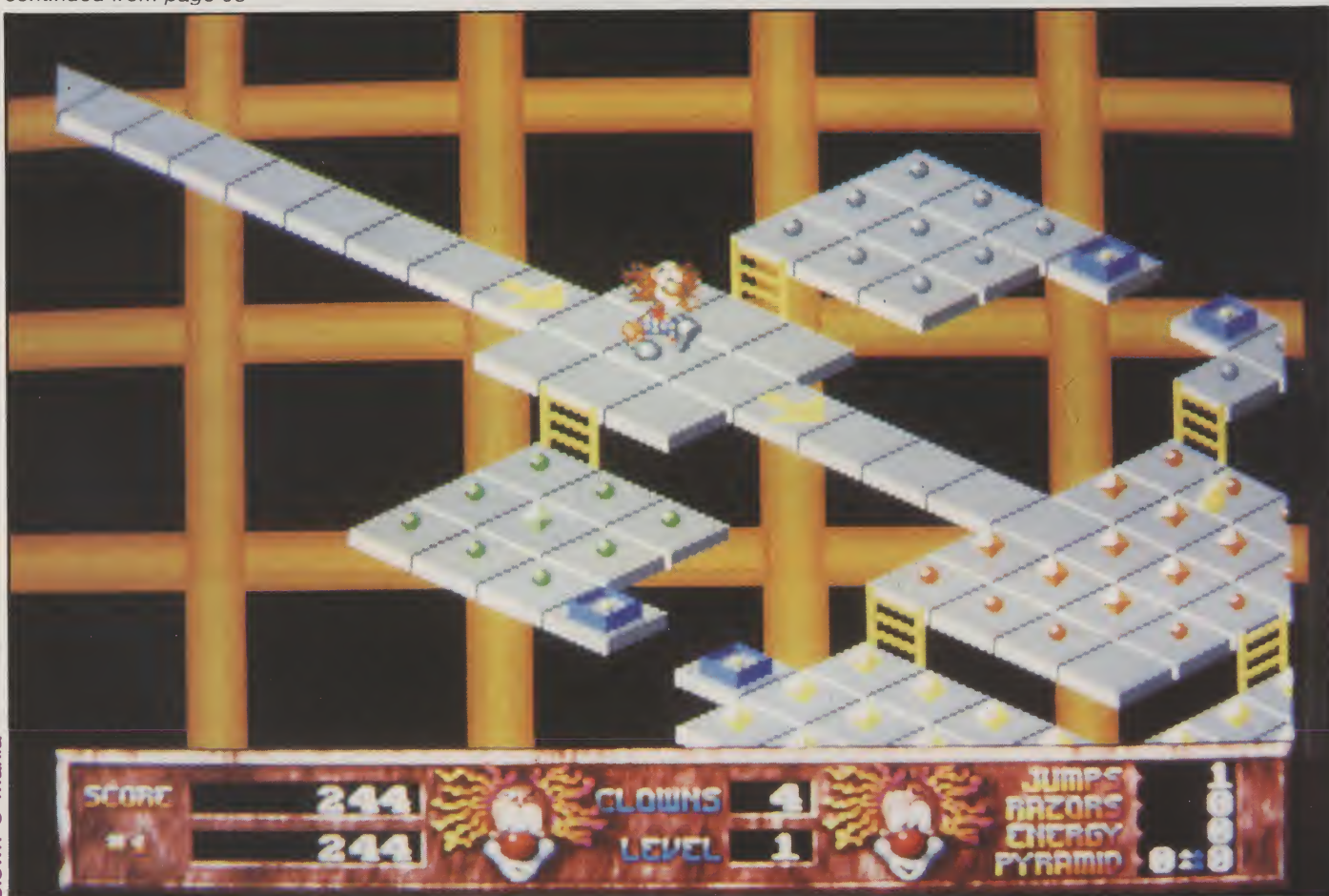
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FIELD REPORTS

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Clown O Mania



to Maelstrom's previous game Whirligig.

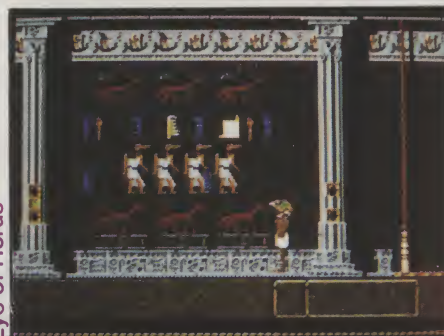
Anyone still with an appetite for solid 3D may fancy a taste of Tynesoft's Roller Coaster Rumbler. The game's set on a killer roller coaster, around which you're hurled with only a machine gun as defence. The bombs, barriers and targets give you and your gun plenty of work. To find out whether or not Tynesoft can cut it with exhilarating 3D, we'll

have to wait for the review.

Back in the land of two dimensions, Logotron are rounding off their latest: Eye of Horus. It's an arcade adventure set in ancient Egypt. You play a character who can change his form into a bird, to aid in your exploration of the the mystical tombs.

From Starbyte, Clown O Mania is about to make an appearance. Beppo was a clown. He made a vast amount of

Eye of Horus



money, and was happy in his job, until he got caught up in Clown O Mania's excuse for a cute central character. It seems he found a map which lead him to a mysterious land of valuable crystals (he may have been rich but he was still greedy). Before he knew it, he was doing his funny clown walk routine around the levels of an isometric Pacman game. One for the kiddies I feel.

One last item before I go (though some would say I went years ago), is news of a game called Bermuda Bears. I'm told it's the world's first real time digital cartoon, and comes from the Kenneth Doughty studios. If the name Kenneth Doughty means anything to you, you're probably quite impressed. It should see the light of day in the autumn of 1990, so when it comes along, just remember you heard it first on the AUI grapevine.

T.H.

Midwinter



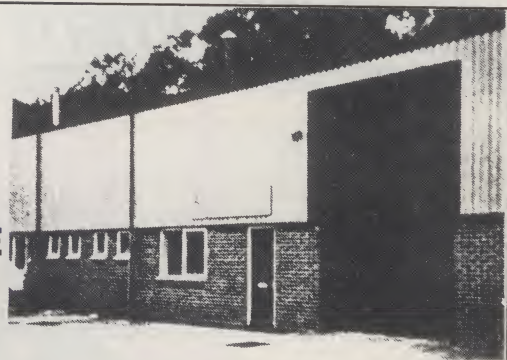
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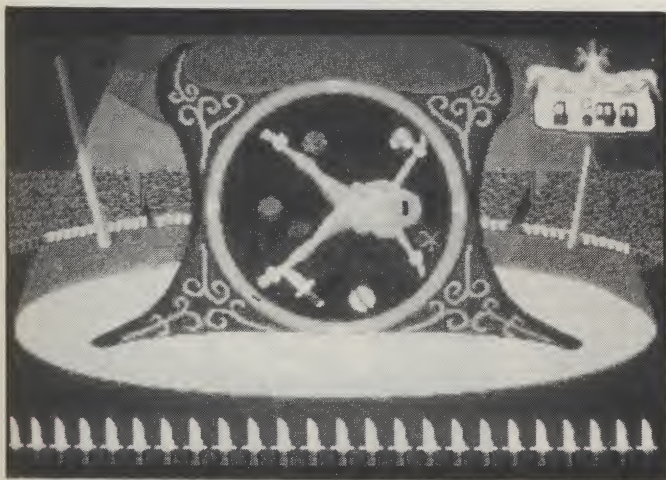
Big Top O' Fun



Mindscape

Circus games have been attempted in the past, but other than the old coin-op Circus Charlie, none had much of a sense of humour. Fiendish Freddy, on the other hand, raises countless belly laughs with routines ranging from Laurel & Hardy trouser gags to violent slapstick in the Dangerous Brothers style.

Times are hard for this small-time circus. The takings are barely making ends meet. If that was not bad enough, the bank has just demanded that you repay your \$10,000 dollar loan by the end of the week. Fail to come up with the cash, and the circus bites the dust. There are six acts in the show, and only an outstanding performance in each will muster enough cash to save the circus.



The show opens with the high diving. Horace is a seven foot tall bald body builder. His idea of high diving is a little more hazardous than the usual five metre event. His act is split into four parts of increasing 'Wow' factor. It begins with a leap from a springboard set at a dizzying height above a tub of water. Rapid stick wagging starts Horace spinning, and once he has gained enough speed, one of eight moves will flash up, indicating that it is time to stop wagging and strike the pose. The more poses you can squeeze in the better, but make sure you line yourself up with the tub in time. The following three dives are each from greater heights than the last. The tub disappears after the first dive, after which you aim for a bucket, a breeze block, and finally a tea cup!

Juggling comes next. You control a unicycling clown. A seal tosses you a series of balls, clubs and fire sticks, and it is up to you to keep them all airborne during the timed act. Fiendish Freddy, a wicked clown hired by the bank to sabotage the show, lobbs bombs in amongst the rest of the objects.

"It is easy to get so wrapped up in just keeping him on the wire that you forget to walk along it, but if you hang around you're likely to get blasted by Freddy's cannon."

Make it to level three and a baby somehow gets caught up in the excitement, who needs to be juggled safely back into his pram.

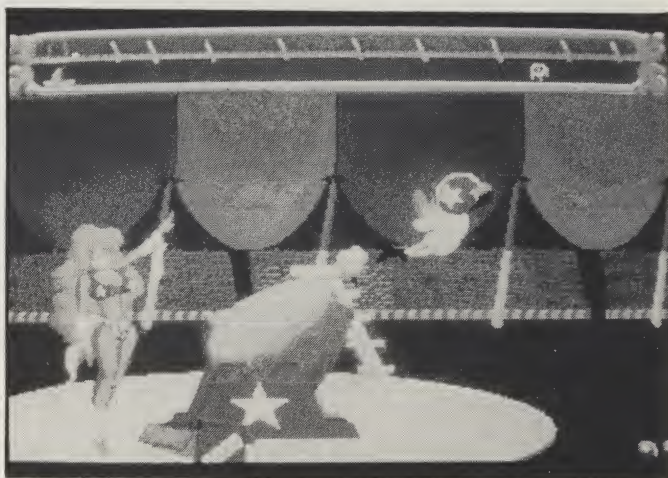
The least visually spectacular event is the trapeze. The act is fairly simple, demanding that you get from one side of the big top to the other, without a safety net. Timing your launch from one swing to the next can be tricky, but Freddy is on hand with a giant pair of scissors for anyone who takes too long. Paper shields and flaming hoops add to the danger. The plain graphics of this stage are made up for when you mis-time a lunge, which is followed by an excellent death sequence.

Knife throwing is the one event I could happily sit out. Your assistant is pinned to a spinning wheel, with a number of balloons placed around her person. You attempt to woo the crowds by bursting the

balloons with razor-sharp knives, preferably missing your assistant's ample flesh. Hitting the targets is down to gauging the delay between throwing the knife and its impact.

The tightrope is presented in much the same way as it was in Circus Attractions. You begin from the top right corner, working your way into the foreground in the bottom left of the screen. Tony Tiptoe is a big lad, and wobbles around like a jelly operating a pneumatic drill. It is easy to get so wrapped up in just keeping him on the wire that you forget to walk along it, but if you hang around you are likely to get blasted by Freddy's cannon. Graphics are excellent in this event. Tony begins as a small sprite, but grows with each animation frame as he nears the end of the wire.

My favourite stage is the finale: The Human Cannonball. Fearless Fernando's assistant puts a random amount of explosives into the cannon, which decides how far you'll be fired. You have to estimate the distance, and position your angled trampoline where you think you'll land. The fuse is lit, and the cannon slowly tilts downwards. Pressing



fire shoots you from the barrel, sending you flying across the ring. Land on target, and take your applause. Miss, and call for an ambulance.

The game comes on three disks; all those enormous cartoon graphics take up a lot of disk space. Subsequently there is a lot of loading between, and sometimes during events. Along with the graphics, there are loads of brilliant sampled sound effects. Not so hot are the circus tunes which insist on playing throughout the game. An option of just effects would have helped.

Fiendish Freddy was programmed by Chris Gray, author of Infiltrator I and II. The subtle touches of humour from his previous games have been stepped up enormously. Computer games with the ability to make people laugh are extremely rare. It is expensive, but if you want a giggle with your gameplay, Fiendish Freddy is a must. Highly recommended.

T.H.

Graphics: 9 Sound: 9 Playability: 9
ABSOLUTE VALUE: 8 Price: £34.95

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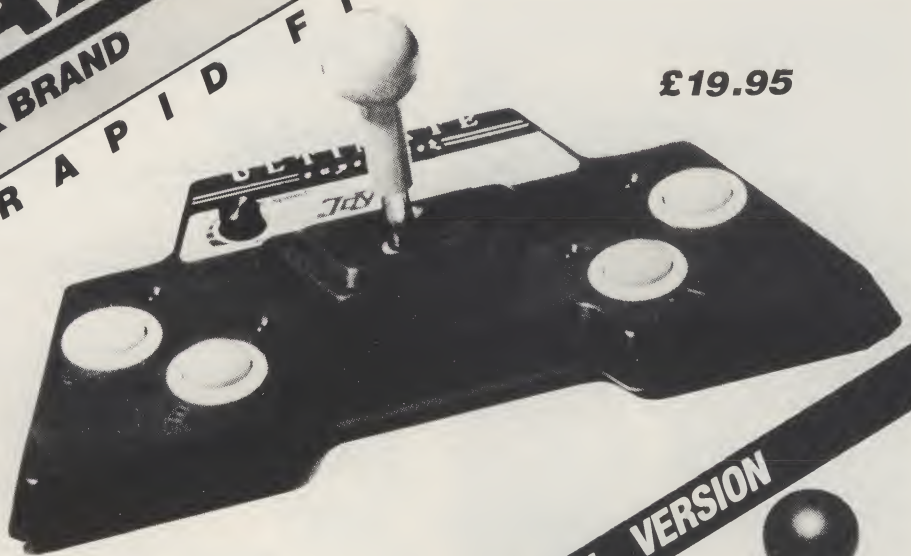
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Standard Cruiser



gain, the Clear Cruiser Autofire is the stick for you. With a frosted clear plastic base, it too performs on par with the standard Cruiser, but for the addition of the autofire, which ups the price to £12.99.

Uzzi Interface £5.99

Today most joysticks are available with an autofire feature, but it may be that your old faithful stick is without such a function. The Uzzi Interface is the answer. It plugs between your stick and the computer, adding a variable-speed autofire to your arsenal. All the clever bits are set in a tough plastic block, so it's almost indestructible. A small knob controls the rate of fire, which is more important than it sounds. Often a conventional autofire is useless, as the program can intentionally or otherwise block very rapid fire. By adjusting the knob, you can find the optimum rate for the best possible result. A good idea which works very well.

Crystal £14.99

The Crystal comes in a number of variations. It combines the pistol-grip (as pioneered with the Quickshot) and the Professional Autofire covered in the November issue (since renamed the Super Professional). The clear base is very much like the Super Professional, but with the sides squeezed inward slightly. The shaft is loosely sprung with a contoured grip. The microswitched fire buttons vary a little in tension, but

Multi-coloured Cruiser



Uzzi



mould neatly into the thumb.

The combination of a loose shaft with microswitches makes for an accurate stick. However, for games such as Kick Off, which demand accuracy and a strongly centring shaft, the Crystal is not ideally suited. It also feels as if it could break off under intense strain, or indeed under a clumsy foot. All the same, it performs well in general, and ranks highly in my own joystick top ten.

For a couple of pounds less, you could try either the Red Crystal or the Green Crystal varieties. Both handle as the standard Crystal. All three are available with autofire, which puts an extra two quid onto the normal price tag.

T.H.

Contact: Chips Computer Shop, 151-153 Linthorpe Road, Middlesbrough, TS1 4AG. Tel:(0462) 219139.

Continental Circus

Virgin

Continental Circus originally came from Taito, a coin-op manufacturer who until recently was not associated with 3D race games. Chase HQ is without doubt Taito's best 3D venture, which should be arriving any day now via Ocean, but HQ's predecessor, Top Speed, was never signed up for computer conversion. Unlike those two, Continental Circus is not a road racer, but a Formula One simulator, albeit in an arcade style.

The structure of the Formula One championship has been altered to suit the game. To stay in the running, drivers must finish each race inside a set position dictated by the computer. Not only that, but each section of the current circuit must be completed within a time limit. It's the old "checkpoint" routine, which may not be an accurate representation of a real formula one race, but then waiting in an arcade for an hour, while your mate completes his eighty laps of Silverstone wouldn't be much fun either.

Controls are simple: steering, braking, accelerating and switching between high and low gears is all achieved with the joystick. The car is fairly nippy, which means you can still weave between the traffic on all but the tightest of bends. This is handy, as you begin at the back of the field, a good few places behind the first qualification threshold of

"it is nice to see the opposing cars drawn with true perspective rather than the flat cardboard cut-outs with which we are presented so often."

80th position. Before you get used to the sensitive controls, it can be difficult not to over-steer in congested parts of the circuit. Hit a rival once and smoke floods from the engine. A flashing "Pit In" message advises you to make a pitstop as soon as possible. Make it to the pit and your diminutive pit crew run out and extinguish the fire, while the clock is frozen until you get going again. Fail to make a pitstop and the car will eventually explode, unless you hit a second car which will send you spinning across the track, only to explode as you come to a halt.

If either you run out of time, or finish the race in too low a position, you'll have to start all over again.



A continue play option, stoked with five credits, allows you to pick up from where you dropped out. Unlike many games, when the timer ticks its final tock, the car coasts to a gradual stop, so you can sometimes complete a section with no time left.

Graphics are pleasant throughout, and move fairly smoothly at speed. I would guess the smaller frames of the cars and billboards were created by shrinking the largest frames mathematically, as many are none too neat in their more distant frames. The road is also a touch on the messy side. However, it is nice to see the opposing cars drawn with true perspective, rather than the flat cardboard cut-outs with which we are presented so often. The sound effects are prominent, but a little too abrupt to be realistic. Some subtle fading in and out of the sounds would have helped.

Anyone can pick up Continental Circus, and most will be able to get a fair way through it. It's very playable from the off, but other than the pitstop, it's got nothing that Pole Position didn't offer years ago. Variations from track to track are no more than a new skyline on the horizon and a different colour scheme. That casts doubt over its lasting appeal, but in the short term it's got bags of playability. Virgin have done just about as good a job as was possible, and almost all criticisms can be traced back to the original coin-op. I like Continental Circus, but I don't expect to be playing it very far into the future.

T.H.

Graphics: 8 Sound: 7 Playability: 7
ABSOLUTE VALUE: 7 Price: £19.95

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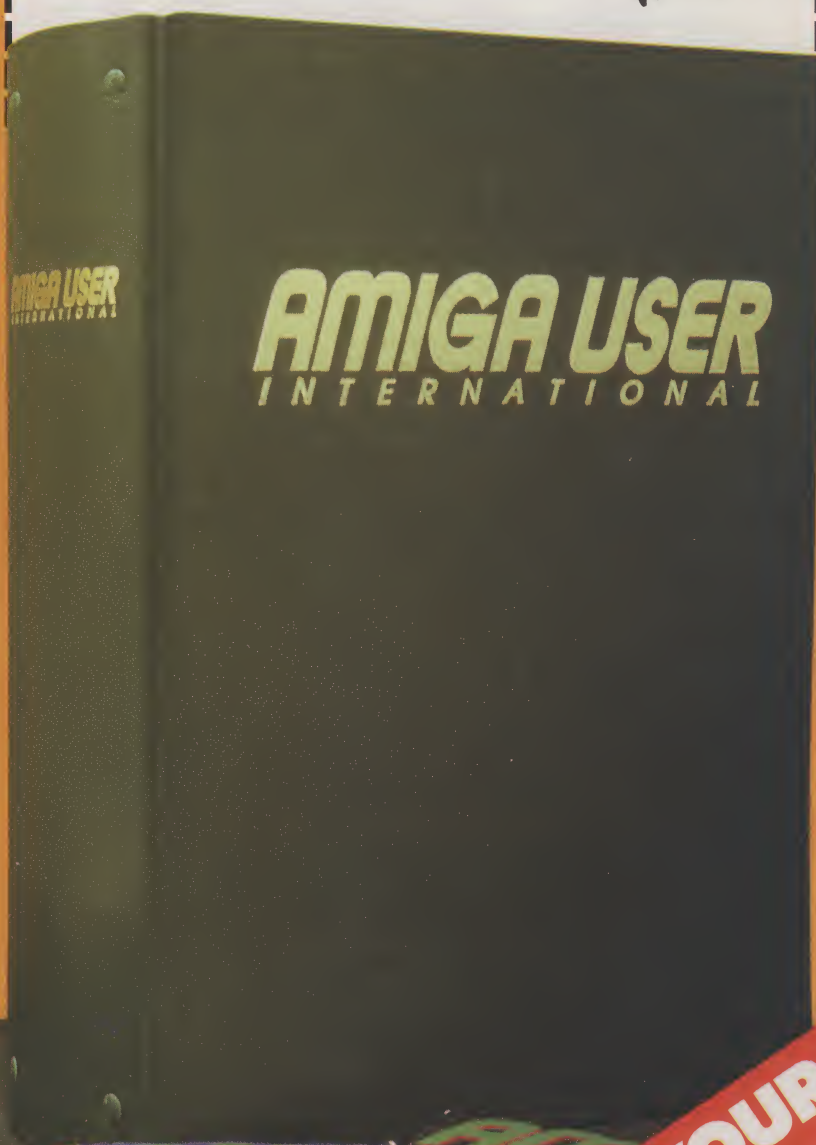
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When George Lucas first set the film Star Wars loose on an unsuspecting public back in the 70s he really started something. More than ten years, two film sequels, three coin-ops, endless T-Shirts, models, memorabilia and three multi-format computer games later, the legend continues strong. Obviously the Force is very much still with us.

Just in case you missed out on them before, Domark's three conversions of the original coin-ops are now available in one package. All three games closely follow the plot of the films and are divided into several consecutive sequences of action.

STAR WARS

The conversion of the most famous of the three coin-ops has you taking the role of Luke Skywalker. First off, you're approaching Darth Vader's Death Star and must shoot down the Empire's Tie-Fighters and their missiles. Next, you're shooting your way through a network of laser towers after which it's down into the trench inside the Death Star itself. This involves flying down a narrow passage, avoiding obstacles before reaching your final aim; hitting the exhaust port and causing Darth Vader's Death Star to explode.

You're equipped with a limited number of shields and unlimited lasers. There are plenty of opportunities for gaining bonus points - shooting Darth Vader's ship for example or hitting a set number of towers in time.

Because the exhaust port sequence, complete with vector graphics, is lifted straight from the original film, this is the game which manages to capture the Star Wars atmosphere most accurately. There's nothing any more but the gameplay is slick, the action is fast and the sampled speech constantly reminds you of the films, not to mention the coin-op.

THE EMPIRE STRIKES BACK

In its use of vector graphics, sampled speech and multi-sequence action, The Empire Strikes Back is very similar to Star Wars. This time, however, you don't just play the part of Luke - you get to try on Han Solo's flying gear as well. For the first level you continue your fight against the evil Darth Vader as Luke. He's on his snowspeeder and attempting to prevent the Empire's Probots from sending pictures of the Rebel's power generator to the enemy by shooting at them.

Next comes an episode which features Han Solo fighting Tie-Fighters (just as in Star Wars) before the action switches back to Luke. He has to disable two types of imperial walkers; huge, but slow moving AT-AT walkers and small, mobile AT-ST walkers to trip them up. The final and toughest level has Han Solo navigating the Millennium Falcon through a turbulent asteroid field. For each collision one shield is lost.

There's little more to this than Star Wars but the vector graphics action isn't quite as fast. Movement tends to slow down when there are lots of characters

on screen though this doesn't significantly spoil your fun. On the whole, it's an enjoyable game which still manages to capture the Star Wars atmosphere.

RETURN OF THE JEDI

Based on the weakest of the three coin-ops, Return of the Jedi is also the weakest of the three computer games. The action starts off with Princess Leia making her way through the forest on a speeder bike, avoiding obstacles and shooting or bumping Imperial Stormtroopers off their bikes.

The action transfers to Chewbacca as he attempts to manoeuvre a Scout Walker to the bunker where Han Solo is waiting. Logs roll towards him and must be shot or avoided.

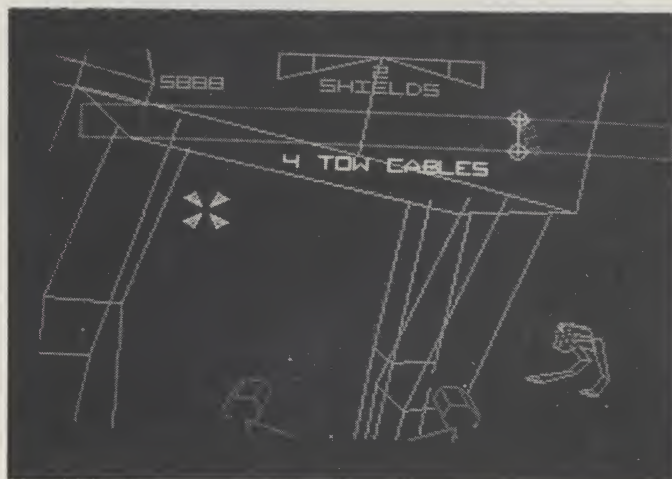
In a split wave effect, the gameplay alternates between Chewbacca and Lando Calrissian as Lando attempts to reach the Death Star while fighting off Tie-Fighters and other enemy craft.

Next it's time for the Millennium Falcon to enter the Death Star. Travelling down a tube pursued by Tie-Fighters and avoiding pipes, Lando has to destroy the reactor and make a quick getaway.

All this lacks the playability and atmosphere of the previous games. The split wave sequence is an original idea but it doesn't take long for the novelty of the repetitive and occasionally frustrating gameplay to wear off. This is probably the one you'll play least of all three.

Over the years, the Star Wars conversions have achieved something of a classic status. Technically, there's nothing extraordinary about them. Vector graphics are pretty old fashioned and three or four infinitely repeated levels per game do not offer outstanding value for money but somehow the gameplay, with its strong reminders of the film and simple, arcade addiction, still manages to keep you hooked. If you don't already own them, The Star Wars Trilogy should make a worthy addition to your collection. Even if you are not grabbed immediately by Return of the Jedi, it's worth it for Star Wars and The Empire Strikes Back.

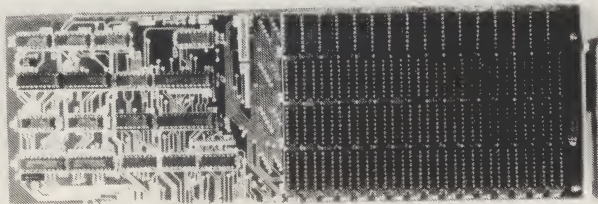
K.H.



Graphics: 6 Sound: 7 Playability: 8
ABSOLUTE VALUE: 9 Price: £24.99

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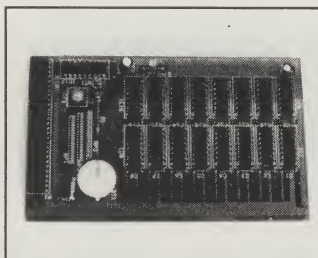
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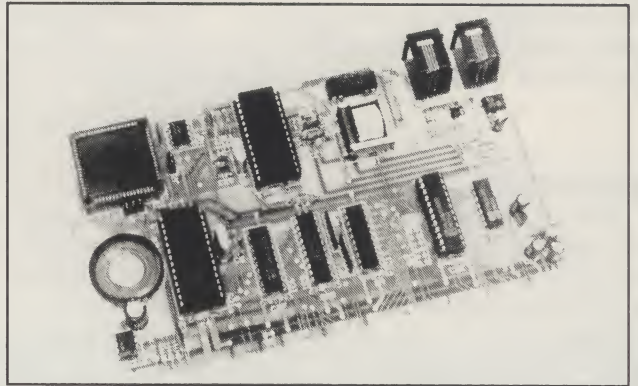
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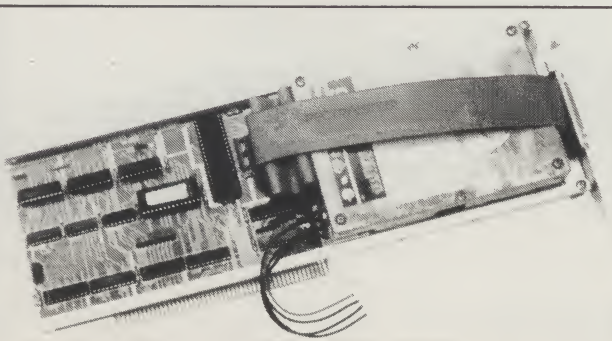
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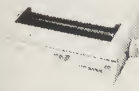
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PREVIEW

Battle Squadron

Innerprise Software

Discovery's Hybris, regarded by many as the best Amiga shoot 'em up, was taken down a peg with the appearance of Xenon II. Now the programmers of Hybris are about to hit back, this time under the name of Innerprise Software, associated with ex-Microprose boss Stewart Bell's new Electronic Zoo label.

Battle Squadron, like its predecessor, is a futuristic vertically scrolling shoot 'em up. The first level shows remarkable similarities to Hybris in its background graphics, combining rugged landscapes with hi-tech developments. Hybris did have rather a small game window, and this is one area in which Battle Squadron makes improvements. You now get the full height of a PAL screen, and a slight horizontal scroll to extend the full-screen width further still. There's also a simultaneous two-player

mode. It could hardly be less original, but with its tremendous array of stunning weapons, slick graphics and sounds, Battle Squadron is one to watch.

T.H.



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When Domark announced they had the rights to convert several Tengen coin-ops last year, Dragon Spirit was the least well-known of the bunch. Unlike Xybots, Vindicators, APB and Toobin', which you'd find in practically every other arcade, Dragon Spirit is a relatively obscure machine with what you could describe as a small cult following rather than an army of fans.

The story centres around Princess Alicia who has been captured by the evil demon serpent Zawell. Because Zawell is defended by huge armies of ghoulish, grisly beasts, the only creature that stands any chance of bringing the princess back is an airborne dragon. Armed with fire and equipped with an endless supply of air-to-ground bombs, he has to encounter eight vertically scrolling levels of action before a final confrontation with Zawell himself, deep in the corridors of the demon's castle.



Each of the landscapes has its own magical features: trees which lob missiles, volcanoes that belch out huge fiery birds and gun-emplacements in the shape of grinning skulls are just a few. Zawell's henchmen attack continuously from the air and from the ground. All sorts of birds and reptiles fly down the screen in formation, some exploding into equally dangerous pieces when they are shot. Balls of flame and bullets hurtle towards the dragon while a variety of land-creatures (frogs, hippos, sea-monsters and so on) need to be bombed on the ground.

Initially, the dragon is equipped with three heads and average firepower. Collide once and you just lose a head; twice, and you lose a whole life. All dragons after the first one start out with only one



head but you can increase the number (and so double your firepower) by bombing the blue eggs which appear at intervals on the ground and catching the power-up pills they release. Red eggs contain extra firepower; collect enough bonuses and you can turn your average pea-shooter into an extra-destructive long-range flame-thrower!

If you're still greedy for more extras, you can obtain a whole range by shooting the flashing beasts. These release extra points, bonus firepower, shields, multi-directional fire, homing fire and speed-ups. A couple of unusual bonuses include earthquakes, which reduce any ground-based enemies to rubble, and a small dragon pill which transforms you into a mini-dragon, a quarter of your original size, ideally suited for dodging through a hail of closely spaced bullets. There's also a poison pill: power-ups marked with skeleton heads eat into your energy supply and strip you of one of your multiple heads.

For fans of the arcade there is another minor niggle; there's no in-game music and the sound effects are very limited. A few blasting and shooting noises don't really begin to reflect the sound capabilities of the Amiga.

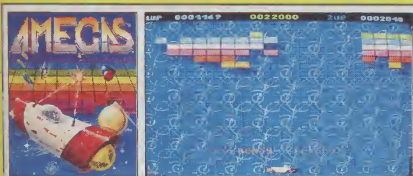
Minor complaints aside however, Dragon Spirit comes across as a very competent shoot 'em up. It's packed with features and taking control of a dragon certainly makes a change from the usual round of spaceships and fighter planes. Hardened shoot 'em up fans might find it a little on the slow side but if you're eager for a change you could do a lot worse than take a look at this.

K.H.

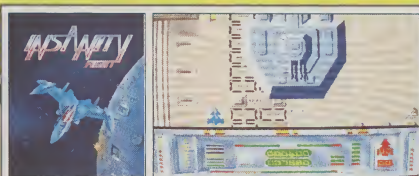
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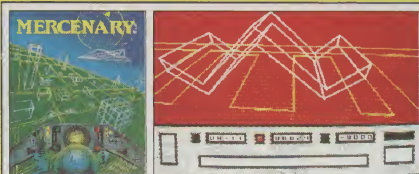
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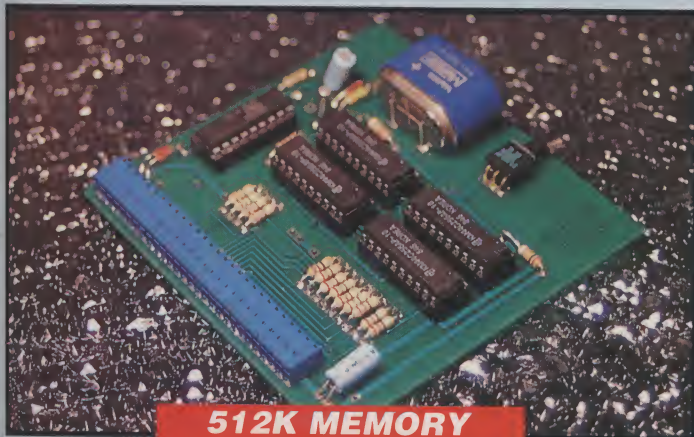
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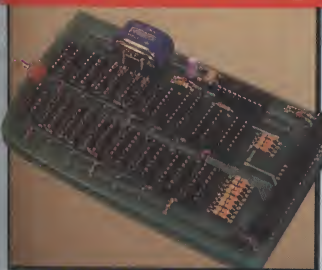
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...WIN... WIN... W

Here at *AUI* we have always tried to give our readers fun comps., but this month really takes the garibaldi! Not only do we give you a bumper 156 page issue, complete with mega-music section and masses of games, but we also have some great competitions!

That most magical of music makers – a CD player – is up for grabs. And, not only are we giving away a CD player complete with accompanying CDs of Jean Michel Jarre Live, the Eurythmics, and Tracy Chapman to the winning entry, but 25 runners up will each receive a music voucher to the value of £15!

ANCO, makers of forthcoming "Player Manager" (Anil Gupter of Ancosays it will be the greatest footie game yet), and that great hit "Kick Off", have donated the prizes to ensure that next year is to be your best yet. They couldn't get you tickets to see the World Cup Final with a British team in it(!); still you can play on Player Manager and Kick Off while listening to your CDs!

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3. Where will the World Cup Final be played in 1990?
4. What was the previous name of Anil Gupta's company?

Closing date for entries is January 5, 1990. Answers on a postcard please, and send them NOW to:

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Amiga Answers

**Yuri Large tracks down the tips
that keep you on top!**

Dear AUI,

Just one simple query how do you change the default window size of the Shell? Everytime I use the Shell I have to resize the window to maximum. It would be nice for it to be done automatically. Hope you can help.

Yours sincerely,

G.R. THOMPSON, MID GLAMORGAN.

Dear Mr. Thompson,

There are two methods of opening the Shell - from the Workbench by clicking on its icon, and from the CLI by using the "newshell" command. In both cases you can alter the size of the window at start up.

In order to change the size of the window you require you must give the full specification. Let's take an example window specification:

`NEWCON:0/0/640/256/Hello` The first part of the above tells the Amiga what type of window you are using. Some of you will have already heard of "CON:" - this was the type of window used by the old CLI. "NEWCON:" as you've probably guessed, is the type of window used by the Shell. This new type of window for 1.3 allows command line history (i.e. calling up previously typed commands) and command line editing (i.e. you can go back and edit a command that you are typing, without having to delete everything to get to the mistake). The second part of the window specification tells the Amiga where and what size to make the window. The first two numbers - in this case "0/0" - are the co-ordinates of the top left hand corner of the window. So, in our example specification the window would start at the very top left of the workbench screen. The other two numbers ("640/256") give the size of the window, the first number gives the width and the second the height. So, in our example the window would cover the whole of a PAL Workbench screen. The "Hello" is the name that appears in the title bar of the window. Be careful if the name you want has a space in it - if it does, the whole window specification must be enclosed in speech marks, e.g. "NEWCON:0/0/640/

256/Hello there"

Now you have your window specification you must put it in the appropriate place. To open a custom Shell window from the CLI you just type the command "newshell" followed by the required window specification. Simple, eh?

When using the Shell icon from the Workbench it's a little bit more complicated. Firstly, select the Shell icon by clicking on it once. Then select the Info option from the Project menu by using the right mouse button. Once you have done that you will be presented with the Info window; click on the gadget labelled ADD which is at the end of the TOOL TYPES dialogue box. The cursor will then appear and you must type:

`WINDOW=NEWCON:0/0/640/256/Hello`

You can of course change the window specification subject to your requirements. Once you have decided, click on SAVE et voila! Your Shell window will now open as you wish it everytime...

Dear AUI,

Hello, I'm new to computing and I've got an Amiga 500 (everybody SCREAM!!). I'm hoping to set up a graphics/3D animation work station. I want to be able to assemble storyboard and 3D animations in memory and then download into 2 domestic VCR's for a showreel.

Here are my problems so far: memory (!) and compatibility. The Commodore A590 looks very tempting with expandability to 2Mb.

However, would this memory clash with future DRAM expansion in the slot under the Amiga? Alternatively, the Oasis Services "8-UP!" DRAM expansion, or "Starboard 2" with 2Mb DRAM and a 68881 math chip (useful for ray-tracing) are as appealing as the hard disk. Can I use either with a hard-disk as well?

Since I've heard certain hard disks have access times equalling DRAM speeds should I buy a larger hard disk (greater than 20Mb) and not worry too much about RAM expansion?

Finally, have you heard of a domestic VCR controller or similar device which will enable me to edit accurately and synch my animatics to/with audio on VHS?

Any help would be biblical in its proportion, may your seed be fruitful, etc...

Yours sincerely,

SIMON A. BUNN, WEST SUSSEX.

Dear Simon,

As I've said lots of times before, Commodore's A590 Hard Drive Plus is indeed an excellent buy. It does not clash with the A501 or any similar RAM expansion which plugs into the A500's trap door.

The "8-UP!" board is, at present, only available for the Amiga 2000. However the Starboard 2 does offer an excellent route for the expansion of an A500. As you've mentioned, not only does it allow you to expand the memory of your system, but there are also two plug in modules available for it.

The one you have mentioned allows you to use a 68881 maths co-processor with your Amiga.

The other module available is a SCSI interface which you could use to connect a hard disk. The Starboard 2 also has a pass through, which allows you to plug additional devices onto the A500 with the Starboard 2 sandwiched in between. However, unless you particularly want access to a 68881 the Starboard 2 probably offers nothing more than the A590 and at a greater price.

Hard disks are indeed getting much faster, but they are still more than 100 times slower than RAM on straight data access. The other problem is that data always has to be loaded into chip or video RAM before being displayed. In terms of animation, more RAM will generally be of greater use than a hard drive. However, if for instance you had a 3Mb Amiga with one floppy, you would be able to produce animations of greater than 2Mb's, but you wouldn't be able to save them onto disk! Therefore, I would say that a small hard disk and extra RAM would probably suit your requirements best.

Finally, sorry but I know of no cheap VCR controllers for use with the Amiga; I could only tell you of a few very expensive ones! If anyone else knows of one let me know! In most cases for transferring animations to video, the home enthusiast can use a modulator costing £20 to produce a colour composite video signal which can be fed directly into a VCR. For better quality results a genlock can be used. There are now a wide range of genlocks available from about £100 to £1000 in price, and of course the more you spend the better the results. Make sure when buying a genlock that it works using the European PAL standard video signal, as most of the ones produced in the States use their NTSC signal.

Dear AUI,

I have just started my second year at

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Calco Software

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Polytechnic and one of my course requirements is that all my work should be typed or printed. As I commute a fair distance to college I have got myself a system at home consisting of an Amiga 500 (1.3 Kickstart), Spirit Technology 0.5 Meg RAM upgrade, an Okimate 20 printer and Kindwords 2.0. As a student I couldn't afford a Mac SE (which the college use) so I settled for the nearest viable alternative, the Amiga. The problem is that I cannot type to save my soul, and even a simple letter like this takes forever (2,500 word essays leave my index fingers feeling like they have been stepped on by the Incredible Hulk). Can you recommend an inexpensive, effective typing tutor program? Also, is it possible to port over ASCII files from the Amiga to a Mac without spending £500 or so on A-Max and all its trimmings? I'm also saving up (on a student grant!) for a second drive and/or a hard disk, but would I need a second drive if I had a hard disk?

Keep up the good work on your magazine, it's the best on the market for the "serious" user with only a passing interest in the latest games.
Yours faithfully,
ROBIN WHALE, PENZANCE.

Dear Robin,

As far as I know there are three typing tutors currently available for the budding typist. The first and the most primitive is called 'Typing Tutor + Word Invaders', which I believe is ported from a previous 8 bit version - it certainly looks like it. This package has boring presentation and the Word Invaders gets very repetitive.

The other two packages, 'Mavis Beacon's Typing Tutor' and 'Intellotype', are far better in both presentation and complexity. Mavis sets you a lesson in which you practice one particular technique, and when you have finished she lets you play a game. For instance, in one game you have to type fast to race another car. Intellotype follows the same approach, using a tight rope walker. Also, with Intellotype you have to type a story chapter by chapter at the end of each lesson, which apparently gets quite steamy in the later stages (my typings not good enough!). Either of these two programs should do the job more than adequately. Both of them retail for about £25.

Mac disks are notoriously difficult to copy due to the variable speed drives that Apple used in the Mac's design. At present, all the solutions available for Amiga to Mac file transfer involve the use of a Mac compatible external drive. Therefore, the cheapest solution available, Mac-2-Dos plus Mac compatible drive, still costs more than £200! The only other method would be to use a serial link, but that would either require you to take your Amiga in to college or to connect via modem down a phone line.

If your need is desperate, then I would say that the extra facilities that A-Max would offer you would probably be worth

the extra 200 pounds or so it would cost you. Don't forget that all that Mac-2-dos would allow you to do would be to transfer files, whereas A-Max would actually let you run the software you use at college.

Both hard disks and second drives are optional extras on the Amiga. You can use either but most people end up with both. This is because although a hard drive lets you use programs designed for two drives, it will not rule out the swapping of disks when doing a disk copy.

Dear AUI,

After reading your magazine's letters page I am convinced that you will be able to help me. I own an Amiga A500 and I am having difficulty locating an accounts package that will help me run a mail order club, catering for orders, payments, commission, etc. I need to be able to control 12+ customer accounts, keeping track of order details, payments made and balances for each one.

Previously I ran the club on a Spectrum 48k using two marvellous programs called +80 Finance Manager and Masterfile. Even though the Amiga is a far more advanced computer than the Spectrum, it does not appear to have many good business programs. I have delved into the Public Domain area which boasts a plethora of business programs, but after purchasing several accounts programs I find that many of them have serious bugs, are incomplete (no file save facility, etc) or too hopeless to be sold as proper programs.

Moans aside, please can you or any of your readers restore my faith in the superb Amiga by coming up with a decent accounts package.

Yours faithfully,
C.B. MARTIN, WEST MIDLANDS.

Dear Mr. Martin,

Unfortunately I am unable to recommend any of the accounts packages available for the Amiga for your particular application.

All the packages currently available are fairly inflexible and on the whole rather badly written, as it seems you have already discovered. However, I would say that using a combination of a spreadsheet and a database you could get the job done. On this front I would say that Superbase Personal 2 and Superplan from Precision Software are ideal.

Dear AUI,

I have recently purchased an Amiga B2000 and having moved up from an 8 bit iconless/windowless system there have been a couple of problems. I think the Amiga is a great machine and have been able to solve most of my problems. But, a couple of queries still remain: First - how do you place icons (tools, utilities, etc.) onto the Workbench screen? Is it only for disc icons? I can create drawers and

windows and then include my programs, etc. easily. I can also modify my startup-sequence, and I am fairly happy using the CLI. So can you please explain how to place icons onto the Workbench Screen?

Second - this is more of a hardware query, I am wanting to buy a hard drive in the near future, and have bought a SCSI controller already. Is there a way to identify a SCSI hard drive from the type numbers? I have found out some numbers by searching magazines such as ST157N-1 = 48Mb 3.5 inch and ST251N = 40Mb 5.25 inch. Apart from ringing up every advertiser, is there somewhere I can get a list of type numbers? I do find that AUI is the best Amiga magazine on the market today, but being a bit of a techie I would like to see some hardware articles, for instance "How to Build a MIDI Interface" or any other type of general purpose interface

Anyway, keep up the good work, and I do hope you can help me with my problems

Yours faithfully,
P. BINNINGTON, SUFFOLK.

Dear Mr. Binnington,

To place an icon directly onto the Workbench screen simply drag it from its window to the position on the screen you would like it. This has to be repeated everytime you re-boot, unfortunately there is no way of doing it permanently!

Both the SCSI hard drives that you have mentioned are manufactured by Seagate, who make quite a wide range of drives. All of their SCSI drives have an "N" at the end of the model number, e.g. the ST225N which is a 20Mb 5.25 inch SCSI hard drive. However, other manufacturers do not follow this scheme, so for them you will just have to phone round. One thing to bear in mind when connecting such a drive is that you will probably also require a power supply and case to house the drive. I would recommend that you get in touch with Bytes + Pieces in Lancashire who will be able to supply you with the whole unit complete.

With regard to your request for techie articles, I would like to recommend the UK Amiga User's Group Newsletter (of which I just happen to be its editor!) which has already published an article along the lines you mention entitled "MIDI Interfacing On the A500". The UKAUG can be contacted on (0533)-550993 during office hours.

Dear AUI,

I have got an Amiga 500 and would like to upgrade it to an Amiga 2000. I would be most grateful for any information on doing so.

Yours gratefully,
J. BUCKLAND, BFPO 29.

Dear Mr. Buckland,

Commodore UK have no official policy for people wanting to upgrade their A500's. Therefore, you will either have to sell your computer privately or find a friendly Amiga dealer who will part exchange it for you.

F-16 Combat School

*You have read the review now learn how to be
Top Gun with our concise player's guide to
probably the best Amiga flight simulator of
1989: Digital Integration's F-16 Combat Pilot*

F-16 Combat Pilot should need no introduction. I expect many of you will have drooled longingly over a friend's ST version, now at last, can get your hands on one for your Amiga. But how are you going to reach the level of competence in just a few hours, your friend has reached by months of practice? Simple, follow this guide and we will have you crushing the enemy in no time; well, maybe. . . Assuming you have already got the hang of some of the controls we will pick up from there.

Every mission in Combat Pilot is split into several parts. These can be categorised as follows: briefing and planning; arming; takeoff; flight to target(s); termination of target area(s); return to - and land at - friendly airfield. Unlike other games of this genre, Combat Pilot's attention to detail makes each one of these stages a separate challenge. Each of the five missions, require a different approach for successful completion. The sixth mission, Operation Conquest is another kettle of fish entirely - more about that later. For the time being, buckle your harness and get ready - where we are going, we do not need roads.

Planning - all missions

This is one of the most important parts of Combat Pilot though it is the one you are most likely to pay least attention to. During missions you cannot rely on the aircraft being configured for you like training. It is up to you to select the weapons most suitable for the job in hand. One of the features of Combat Pilot is its ability to recommend a bomb load for you, however we would advise caution. What do the ground crew know after all? Checking the weather is vital. If you do attract some unwelcome guests, cloud cover can prove very useful way in shaking off IR tracking missile. Furthermore low cloud cover can mislead your own IR guided missiles like the Sidewinders (air-to-air) and Mavericks (air-to-ground). Very low cloud (<2000 ft) makes battle-field air support missions very tricky and these should be avoided on such days. Alternatively, use the laser guided mavericks - if getting ground support - or Amraams for the

MIGs.

Planning the mission waypoints on the TAC computer is vital. This is the only way you will be able to keep track of ground-based targets. You must remember though, some ground targets - tanks for instance - are highly manoeuvrable and likely to change position.

As you plan a route to your final destination it is not necessary to plan an escape. The best way - often the only way - to finish a mission is to land at the closest friendly base. Using too many waypoints could mean prematurely exhausting your fuel tanks. Nevertheless, thoughtful use of waypoints can help you avoid flying straight over heavily defended areas - airfields for instance. "Fly in slow and low - get out quick!"

Take off - all missions

Except for training - which has a runway start - all real missions are started from the hanger. At first this may cause a few problems because you have to taxi from the hanger -



continued on page 130

continued from page 129

slowly - across the grass to an airstrip. Always keep your ground speed below 25 knots. Keep the thrust below 65-70 per cent and do not be afraid to use the brakes to slow yourself down. Travelling too fast over grass will wreck the undercarriage and put a large blot on your log.

Choice of runway is arbitrary - but you will save time, especially during Operation Conquest if you take off in, or near, the direction you intend to travel. Runways are numbered in degrees of arc relative to north, divided by 10. That is, the north facing runway is runway 36; west, runway 27 and so on. Multiply the number of the runway by 10 to get its compass bearing.

Manoeuvre the aircraft to the start of the tarmac and stop. This is your last chance to make sure the aircraft is lined up correctly. You can use your HUD bearing to check this. For runway 18, the HUD bearing must also show 18 - 16 or 19 and you will drift off course and collide with something.

Take a deep breath and relax. Throttle 60 per cent; flight data on centre Multi-Function Display (MFD); transmit call-sign to tower: check. Set Up front Control Panel (UFCP) to first waypoint. Jam the throttle open to full reheat. Watch the ground speed - 125 knots pull back on the stick slightly; 150 knots pull back hard. You should now be in the air. Undercarriage up, level out at 450 ft - higher and you will be a sitting duck for Early Warning Radar (EWR). Pull throttle back to 90



per cent thrust. Gently steer aircraft round to first bearing: "Go get 'em kid!"

Watchtower - Reconnaissance

Surprisingly perhaps, there is more to Watchtower than meets the eye. If you treat this mission too lightly, it is highly unlikely you will return in one piece - if at all. The objective of the mission is to do a low-level sortie of one or more enemy installations, while relaying important information back to TAC. This seems straightforward enough but you are likely to face at least two problems. First, since you are going to fly right over an enemy base you will be asking for trouble. Second, all enemy bases are heavily defended by anti-aircraft artillery.

There is only one way to survive this mission. Plan a waypoint directly over each of the target areas. Fly in at 400-490 ft, to within 5 miles of target at 90 per cent thrust. As you cross the five mile threshold, descend to 200 ft and jam the throttle open to full reheat. Switch the ATARS (recon) pod on as you fly over the target area and get out fast. Do not deviate from course until you have run the gauntlet of flak. Set bearing for your next waypoint and increase altitude to 400 ft. Reduce thrust to 90 per cent.

Hammerblow and Deepstrike - Destroy key installations

We have bundled these two missions together because they are in essence very similar. The differences lie in the type of targets you will be facing; the tactics used are the same.



The attack itself depends very much on what sort of target you have been sent to destroy. For the purposes of Hammerblow this will be some type of military installation; for Deepstrike, it will be support installations like fuel depots.

Your choice of weapons is important here. If TAC advises you allied infantry are providing laser designation support at one of your targets, make sure you get laser mavericks - and a lot of them. If not, targets like SAM launchers and tanks will be "hot" enough to trigger the camera in the IR Maverick. In either case, you should always try to get the LANTIRN pod which greatly increases the effective range of both types missiles.

On the other hand you may get the short straw. Under Hammerblow, this is bound to be an attack on an enemy airfield. In Deepstrike fuel depots are the tricky targets. Whichever of these is your designated target it is almost certain you will have to do at least one bomb run. In preparation, take a cluster of Mavericks, a couple of Amraams/Sidewinders and your nominal bomb load. For airfields this will be a couple of durandal "concrete dibbers" and for larger targets - like the fuel dumps - 2000lb "iron" bombs.

Approach slow and low. At ten nautical miles up range from target waypoint, select Ground Track Radar and the IR display on two MFDs; select AGM65D from the weapons. Before you reach the five mile boundary you should be able to see - and destroy - any ground support like SAM units. That takes care of the opposition for now...

At five miles out select the 2000lb bomb or the durandals. Now comes the tricky part - and only practice makes perfect. Follow the bombing instructions given in the manual - we are not going to duplicate them here except to say: climbing to 3000ft allows more latitude for error. If you are bombing runways, it makes sense to line yourself up with the target



before starting the bomb run. This increases your likelihood of hitting the mark. On the way out, get your nose below 500ft to stop any more MIGs joining the pursuit. Note also, bridges and airfields are easier to hit after dark.

Tankbuster - close air support

Of all the possible missions on Combat Pilot this is our favourite since it combines all the characteristics of hit-and-run attack - which is the way *AUI's* editorial team like to play.

Weapon configuration is critical for Tankbuster. Take too much in the way of air-to-air hardware and you might find yourself with more targets than you have missiles. Once again, if you are getting laser designation support - use the laser Mavericks and LANTIRN. If you must take air-to-air, take 2 sidewinders and 2 Amraams - and make those do.

Plan of attack is very similar to Hammerblow. That is, fly in low and slow. Switch on radar - Track While Scan (TWS) - at 15 nautical miles up range from the waypoint. This will allow you to get a glimpse of what you will be facing in the air - helicopter gunships are most likely, but these are rare as it turns out. If you do spot something on TWS, wait until you get closer before sending them a Sidewinder sandwich.

Less than eight nautical miles, switch radar to GTR and select IR display. This is easy, especially with the LANTIRN. Centre the lock-on diamond in the HUD and send them back to mother Russia. Watch out for the GTR display though: this can sometimes mislead you into thinking you have not destroyed targets - just wait for the fireworks. If you have five targets, launch five missiles. On the way out from this one, you should have a clean run home unless you are spotted by EWR.

Scramble - The dogfight

Probably the hardest mission to survive for the beginner - but one you must become proficient at if you are to survive for the final test. Scramble is an excellent mission to help you get to grips with basic manoeuvres and using the weapons properly.

Planning is not necessary here. Take off, select the first target on the UFCP and hit the dogfight button. This places your radar into Air Combat Scan mode, which, although it homes on the enemy of greatest threat it can also lose you a potential kill. As a caution reselect the TWS mode and look for the lock on diamond. You should be able to track the MIGs on your radar warning panel - make sure they are in front of you. If they get behind you they can use heat seeking missiles as well as radar guided versions.

The same applies to you. If you are facing a MIG head-to-head, the Sidewinders are useless no matter what the radar says - they need a hot target. Only use sidewinders when you are chasing them.

Amraams can be used at any time - however they have two disadvantages: the first is their greater range - about



30NMs. This will tempt you into releasing a missile too early - WAIT. When possible launch missiles at the least range, this gives the enemy less time to avoid the inevitable. If you can, wait until they fire, count 1000, launch, pull up hard with full reheat and drop plenty of chaff/flares. Now dodge like crazy until you hear the bang and the AA threat warning is released.

Landing - all missions

This is explained very well in the manual, so all we will do is tell you how to cheat! Most airfields now have Instrument Landing System (ILS) beacons. We suggest you get a ground controlled approach, wait until the ILS beacon appears then select the autoland... Just before you do hit the tarmac, at about 10-20ft close the throttle to 60 per cent and glide in. Do not forget to brake though! Watch out too, for winds which can blow autoland off course at the last moment - at least be prepared to try.

Operation Conquest

The ultimate challenge? Perhaps not, but this one will tax you. Ahead lie many hours of real-time air combat and only the strong will survive. Can you defeat the enemy forces? It is up to you to use a combination of the missions described here to weaken the enemy. Watch out for the tank battalions - they will creep up on you. If possible, use the night missions to attack the bridges and airstrips - they are easier to see after dark.

Other tips

Flying at night is tricky but you will always have the benefit of the LANTIRN pod. This greatly eases missions like Tankbuster, Hammerblow and Deepstrike. In the absence of LANTIRN (most likely in Operation Conquest) avoid using IR Mavericks they are not accurate unless used at close quarters, "pickling" targets is tricky too.

Flying over enemy sites is not a good idea. At the very least you will find yourself getting a barrage of flak: watch out it can do some real damage.

During Operation conquest it is useful to carry a pair of HARM anti-radar missiles. This is a good way to knock out the enemy's EWR systems. The same does not seem to apply to normal missions, HARM is a waste of space here. Similarly the Snakeye bombs are a white rabbit in many respects and it remains unlikely you will ever get a MIG pursuing close enough to use one.

One last word from the wise: read the manual. We know it is a big one but, it is crammed with more hints and tips than space allows us here. F-16 Combat Pilot is not the easiest flight-simulator you can play but it is, in our opinion, the most challenging. If you ever get bored with this one, we suggest you take up a more carefree sport, like sky-diving.

M. S.



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AUI/12

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Commodore Bridgeboards

Amiga 2000 owners who are in two minds about their computer can give it a split personality with the addition of a PC Bridgeboard Peter Lee reports

One of the most remarkable, and possibly undersold sides of owning an A2000 is the ability to turn it into a dual-purpose computer giving either IBM PC-XT or PC-AT capabilities.

This means that you can have two computers sharing the same, large box. On one hand you can sparkle with the Amiga's powers, and on the other have access to the largest serious software base in the world.

That is what IBM compatibility is all about and, despite the fact that IBM's XT standard is so old it has whiskers, the real sense behind jumping on this long-established bandwagon is two-fold: The PC is, for good or bad, still the standard office machine, and it is supported by thousands of excellent and imaginative programs.

Right from the early days, Commodore realised the importance, both financially and psychologically, of getting their machine to accept the MS-DOS standard. I well recall being impressed the first time I ran the PC emulation software Transformer on my A1000. Slow, hardly any graphics facilities to speak of, but it did the kind of job I needed.

The ability to run MS-DOS software was obviously a pressing need, because Commodore eventually released Sidecar for the A1000; this took the same approach as the bridgeboards under discussion in that the hardware was in essence a PC XT clone in an add-on box.

The A1000 may now be a cul-de-sac as far as CBM are concerned, but what does remain is their desire to keep toe-to-toe with Big Blue, and make sure they cover all their bets by providing PC emulation.

When you consider bridging the gap between your multi-coloured high-speed Amiga and the entrenched world

of MS-DOS - to put it bluntly 'downgrading' your Amiga 2000 - you have two choices. Both require the fitting of a board inside your computer, which houses what is virtually a PC clone. The cheapest solution to achieve your goal is to buy the PC-XT compatible A2088 board, which contains an Intel 8088 processor running at 4.77 MHz (as an indication, the Amiga's 68000 runs at just under 8 MHz), 512K of RAM, a compatible 16K operating system (Phoenix BIOS), 5.25 inch floppy drive capable of storing a miserable 360K (Half the volume of an Amiga disk).

The more adventurous emulators may like to consider a much more expensive alternative, the PC-AT board (A2286) which features the much faster 8MHz 80286 chip (though still falling short of the normal AT clones which zoom along at up to 12MHz), one meg of RAM, and a high-density 1.2 meg floppy disk drive. Both boards have sockets for installation of a speedy maths co-processor (the XT accepts the 8087, the AT the 80287. With both boards you get version 3.3 of the ubiquitous MS-DOS, and GW-BASIC on disk.

The bridgeboards contain a port which emerges at the rear of the computer, and to which you may add an external disk drive (5.25" or 3.5"), to be used as a PC-only drive. The larger bridgeboard 5.25" drive as supplied in each instance, is installed inside the computer's housing and is accessed from the front panel, below the standard Amiga drive(s).

By installing a bridgeboard in the machine's right-hand bridging slot, up to three of the expansion slots within the A2000 can be used for any of the many PC peripheral cards available. As the bridgeboard only supports the grisly four colour CGA standard, a graphics board might be a good idea, though there is a thriving cottage industry in the

PC world, making all kinds of interesting add-in boards.

Probably a must will be a serial card, for accessing online databases via your existing modem. These cards are relatively cheap, coming in combinations with multiple ports and various accessories such as clocks, parallel ports and games control ports.

You can also buy modem cards to slot into the Amiga for use by the PC board, and in fact a colleague of mine tested his configuration by running a bulletin board on the Amiga, and accessing it simultaneously from the PC side; not much use, but a clever enough example of just how independent the two systems are.

As far as compatibility of expansion boards goes, certain cards CAN cause problems, though Commodore are on record as saying "generally, everything that works on the PC10/20 should work on the A2088 Bridgeboard" with some exceptions. These are that the card should not touch memory locations E0000 to F0000, and Interrupt IRQ 3 must not be used (chief culprits here are some hardcards that are made to co-operate with existing hard disks and which put ROM code in these memory locations).

If you want to improve the graphics capabilities of your emulator, then you would have to invest in a display card, either EGA (Enhanced Graphics Adaptor) or VGA (Variable Graphics Adaptor), though I have not been able to test these yet.

The Amiga and PC are able to cohabit the same system by sharing 128K of a Dual Port RAM, the Amiga using this area to control the clone. And one of the real benefits of having a PC side to the Amiga is that you can fit a relatively cheap PC hard drive and controller inside your machine, and share it between the two systems. In my case my

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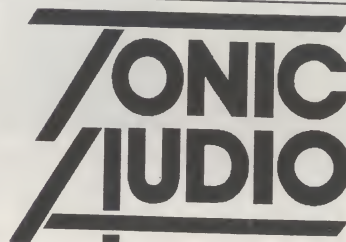
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dealer configured the drive to my specification, which was 15meg for the Amiga partition, and 5 meg for the PC side. But if you intend using your PC side more, you can give a larger slice of the cake to the PC partition.

Unfortunately the PC half of the machine cannot be booted independently (though it is actually functioning immediately after startup), which is understandable but sometimes awkward. To be able to boot the PC alone and leave the Amiga dormant would save time, but such is the nature of the boards that they require the crutch of the Amiga OS.

Actually invoking the PC emulation is as simple as clicking on either a mono or colour icon from Workbench (though the display parameters can be set by altering jumpers on the actual board at installation). A new window opens up, and bingo, your Amiga now thinks it's a PC. Lurking behind your PC window is the standard Workbench screen, and you can flip between the two very simply, running Amiga applications while work on the PC window is put on hold.

Text in the PC's colour mode can be displayed from a palette of 16 colours, though there is a trade-off in screen update, so the fewer the number of text colours, the smoother things become; with multi-colours functioning, the text scrolls upwards like a sluggish caterpillar. Selection of options such as colour and window priority are achieved very simply by means of pull-down menus. The mouse and pointer still behave as they should within the Amiga environment, but will need the Janus 2.0 software to be useful on the PC side, where the Amiga's own mouse emulates the Microsoft mouse by running a driver called Amouse.

Version 2 software also includes a small program for accessing the A2000's clock from the PC side, to save you the irritation of putting the date and time each time you start the emulation.

It is possible to have multiple PC windows open on screen simultaneously, running different applications thanks to the Amiga's multi-tasking capabilities - but to make a PC window active, the others must be frozen - a kind of suspended animation. And provided your Amiga application supports the clipboard feature, you can cut from a PC window and paste the material back into an Amiga window. Even if you close a PC window completely, the PC is simply put in mothballs, and when you open up the PC side again, your last screen will be available.

One interesting aspect of this background running would be as a print spooler, perhaps.

A more sturdy option than cut and pasting text between Amiga and PC windows is the inclusion of two file transfer programs called Aread and

Awrite, which will duplicate a file from PC to Amiga format, or vice versa. For this to work a program called PCDisk has to be run first, which is easily achieved by a double-click on a Workbench icon.

One of the neater options the software allows is for you to configure the Amiga parallel port as a PC port, enabling you to keep your printer hooked up and used for either application (though not both at the same time).



Commodore have been helpful in putting out a number of Technical Support notes to dealers concerning the bridgeboard. In the case of one shortcoming, that of sound, they have advice on fitting a speaker to the A2088, or better still, linking the PC sound output to the Amiga audio in, for broadcast through the monitor's speaker. Readers are advised to consult their supplier for further details.

PC keyboard emulation is managed well on the whole, but there is a problem if you have an Amiga application running when you reset a PC window with the Ctrl/Alt/Del key combination. When you move back into the Amiga window, more often than not you may find your keys behaving as if they are being pressed with a Ctrl or Alt qualifier (eg pressing keyboard 4 will give you a cent sign). This is easily remedied by pressing either the Alt or Ctrl key on its own, but it is something of a bug to trap the unwary.

One final fly in the ointment: If you fit the A2058 RAM expansion board in your Amiga, you will find that in order for the bridgeboard to function properly, your board must be configured to either 2 or 4MB of memory. As there is room on the board for 8MB, then should you want to

fully populate it, you will have the trouble of altering jumpers on the expansion board to cut out half your precious memory while you use the PC side.

CONCLUSION

For the cost of either version of the bridgeboard, you could buy a cheap PC clone - so why bother with installing one in your Amiga? There are a number of reasons which make the board attractive. Obviously you need to be an A2000 owner already, and probably use PCs at

work. Being able to work on the same material, using the same software at home and work is almost essential in this competitive world. You still retain the full use of the outstanding Amiga, but double its usefulness, and you do not take up any more desk space. The chance to use PC hard drives for storage of Amiga data is also very cost-effective, as the PC hard cards are half as expensive as some comparable Amiga ones (why?) though you cannot auto boot with them. Software compatibility is very good, from Lotus 1-2-3, Wordperfect to games (I even had SubLogic's Flight Sim II running, rather sluggishly it is true on the XT board, though much to my surprise). Some PC/Amiga concepts are hard to get to grips with in the first instance - installing MS-DOS to autorun on a PC partition of a hard drive, creation of virtual drives and so on - but any dealer should be able to give you the support your custom entitles you to. Likewise, you may hit problems with some expansion boards, so a 'test before you buy' policy is the only safe way.

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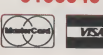
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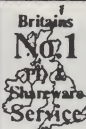
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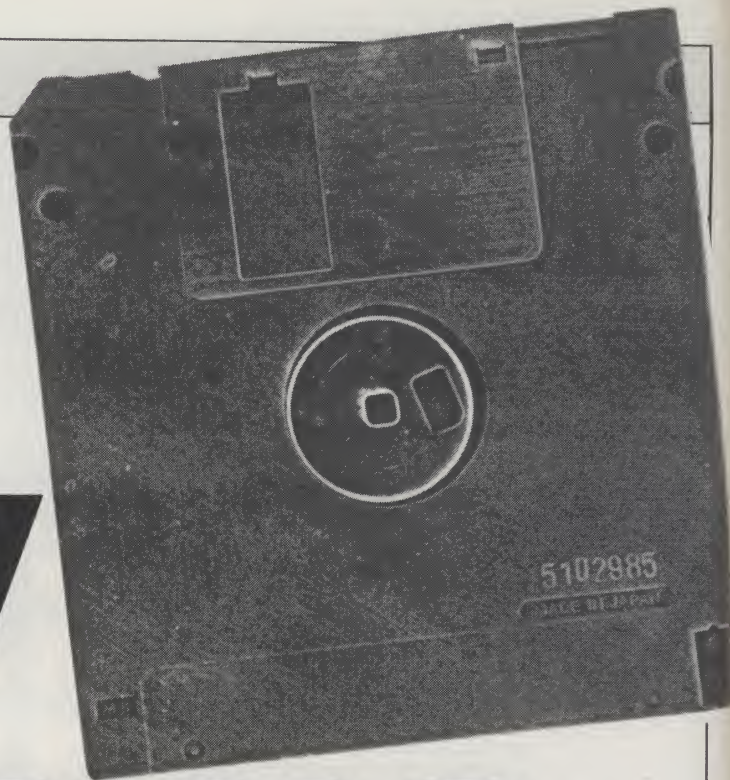
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Disk Copy Systems



Andy Eskelson examines the vital need for good backup packages for hard disks

Backing up your programs is always a problem, software is expensive and the purchaser often feels that his investment should be protected against damage. Exactly the opposite view is often taken by software producers, and often they put software protection on their disks to prevent a backup being made.

There is an area that concerns hard disks. What happens if your hard disk crashes. It is no fun restoring 10 megs of data to a hard disk. I know! I have done it often enough. Fortunately there are a few hard disk backup utilities available that make this task much easier.

What follows is a short description of some backup programs, and other utilities. Remember that **NO** backup program will backup **ALL** programs, and some programs will **NOT** backup at all. If you decide that you need a backup program, have a good look on the market, and also in the PD libraries. You can find some real gems if you look hard enough.

SUPERBACK

Superback, as its name suggests is a utility for backing up hard disks. Superback will spool off the files on the hard disk and put them onto floppy disks in such a way that it is very easy to restore the files to the hard disk, once it has been reformatted to clear any

errors. Even this can take time some 20 mins to back up a 20 Meg disk. Note that Superback is not intended to copy protected software.

Superback is started from the Workbench with a simple double click, and you are presented with a single screen comprising of seven click gadgets and a small window and slider bar. The main click gadgets allow you to select **QUIT** (exit the program) **Backup** to floppy, and



Restore from floppy. Sub-options are: changed files only, **Verify** while writing and **Ask** before overwriting.

Superback determines which **DEVICE** you want to backup by showing the device names in the window on the main screen. Once you have selected the operating mode, Superback will scan through the files on the disk and tell you how many bytes will be backed up.

It will also tell you how many floppy disks you will need to save the data on. The floppy disks do not need to be formatted as Superback formats as it writes the data, but you are advised to have the disks to hand and numbered from 1 upwards.

Once the backup is under way, you are prompted to insert the backup disks into **DF0**: one after the other starting with disk 1. You are presented with a display showing bytes left on floppy, bytes left to backup, and files left to backup. That is all there is to it, when the backup is complete you can reformat the hard disk and then restore the files in a similar way to the backup process. As a bonus, there are several modes offered when restoring the files. You can skip disks, and even restore single files one very useful option is that if the hard disk is dead, Superback will allow you to restore to floppy disk. You have to be careful not to select more than 750K of files at any one time but it does recover the files and makes them available for use.

Superback is a must for any hard disk user and I can find no fault with the program at all. It is simple and easy to use, and also it is not copy protected, so you can back it up!

Superback was developed by **MKSoft**, and documented by the **Disc**

continued on page 144



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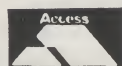
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continued from page 142

Company. There are three versions of the program on the disk, English, German and French each section of the handbook being approximately 31 pages complete with copyright statements and index. The documentation is easy to read and understand. I had a quick scan through the manual and then put it back in the box, there are only a few things that you need to know, as the program is very very easy to use. A first class job on the user interface and the documentation; well done Superback!

X-COPY

X-COPY.(V 1.3) Allows the user to copy quite a few different protection systems as well as the standard Amiga-Dos formatted disks. There are various modes of operation and the program will detect any standard memory expansion that might be fitted and will allow the use of the more advanced mode. The main difference is that with one drive and any memory you can use Doscopy+ and CheckDisk. With Two drives and LESS than 1.5 Megs of ram you get all modes EXCEPT Doscopy+ RAM with two drives and more than 1.5 Megs you get all modes.

Doscopy is a simple system that will copy a standard AmigaDos disk in approximately 67 secs. It does have a few wrinkles however. If Doscopy finds an error, it will automatically switch to the nibble mode. This will then try to reproduce the error on the target disk. This means that you should end up with a target disk that looks very much like the original.

Doscopy+ is a different system. The major difference is that it will not call the nibble mode if it finds an error. This function is best suited to the standard AmigaDos disks, and the backing-up of your own data disks, ie any unprotected disk. It can also make use of the copy to RAM function if you have enough memory.

Nibblecopy this is claimed to be able to copy most nonstandard Amiga formats. It is said that it will copy IBM, ST and Acorn formatted disks, so it is a very powerful system, it is a little slow compared to the doscopy, but it does get the job done.

CHECKDISK

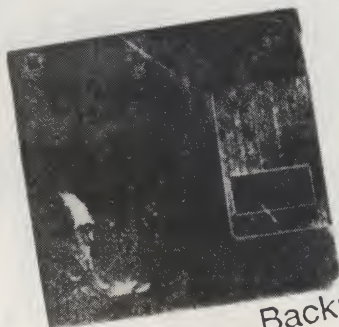
This is not a copy program, but it is a crude disk analyzer that will give the user an indication of what the format is on each track of the disk. This is very useful when you are trying to copy an unknown disk.

The presentation of the screen is very nice with a steel-like control panel. The various modes are selected with the mouse by clicking on the small indicators. It was pleasant to see icons in the form of small light bulbs rather than the more standard red LED depiction, just a very agreeable touch. There are many options that can be selected

from the control panel, including the sync pattern and the length. The starting and ending tracks can also be selected by using the mouse. Click on the source and destination disk indicators if you want to change the defaults (source in DF0 and destination in DF1) and then click on GO that's all there is to using the program. It is very easy to use and it seems to do a very good job.

CREATIVE VISION PARAMETER COPIER 2.00

This is a program for the user experienced in the use of disk systems and also with some knowledge of how disks are formatted. There is an extensive editor that allows you to edit the various



parameters for each track on the disk. There are full support functions as well, so that you can load and save the various parameters and also select the disk directory that the parameters are in. It is far too complicated to go into the various functions that this program offers, so I will just name them and give a very brief description of what they are.

In the editor there are two main dos modes, ADOS and NDOS. NDOS allows the user to select the SYNC and LEN of the track. ADOS allows the user to change the GAP and length of the GAP as well as what the fill pattern will be. The INDEX function can be used to synchronize the data with the index pulse from the drive. The length of the bits recorded onto the disk can be set to 2mS or 4mS GCR coded disks can also be copied by using the MSBSYNC setting. There is a very unusual parameter that can be set and that is the Precompensation it can be set to 0, 140, 280 or 560mS

The program is simple to use, but the editor could do with some more work on it. I found that if I wanted to change just one parameter then I was forced to enter the whole line again. This is not too much bother, but it would be better to be able to tweak the settings without so much messing about. I found that it was possible to not record any syncs at all, and also to let the program try all the valid sync combinations possible to try to make sense of a new disk format. This program is a VERY VERY powerful utility and does need a substantial understanding of disk systems to be used effectively.

The documentation is not great in

quantity, and it has suffered slightly during the translation from German to English. The main problem is one of layout. As it is, the instructions need to be read a couple of times before you start to do anything, and the lack of a quick command chart means that you have to hunt about for the commands. However, there are not many commands to master, and, as the documentation for both programs together is only 12 pages long, it is not too much bother to find the part that you want.

MARAUDER

This is now in its second generation, and it is also has had several updates within the control modules. This copy program is very pretty, and is very easy to use. As with many disk copy systems there are several modes of operation. Starting is easy, just double click on the Marauder icon. Setting source and target drives is very easy, just point and click. You are presented with a status display that tells you at which stage the copy process is at.

The options include:

Index Sync this aligns the data with the index sync on the copy disk.

Verification Option, checks disks as it writes to them, useful for detecting a dud disk.

Copy mode Analytical, Marauder will copy the disk as exactly as possible and will automatically try to defeat any detected copy protection.

Copy mode Verbatim this will copy the disk errors and all.

Speed check, indicates the rate at which data is being written to disk.

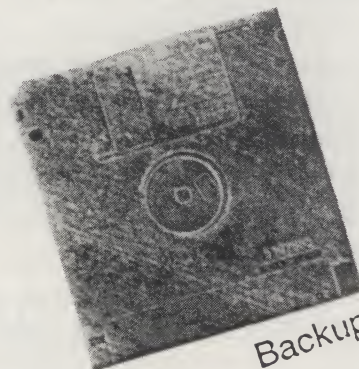
Other programs on the disk include, Reflector, The Decoder, Diskerr and Diskwipe.

This program is fairly old hat nowadays, but it is extremely easy to use.

PROJECT D

This is a very well-known copy system, and like many such systems it comes with several modules.

They are *BackupTool, OmniTool,*

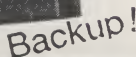


EditorTool, and CatalogTool.

The Backup tool is the main copy system, and this has several modes of operation. It is however very simple to use, and it caters for two drives. The

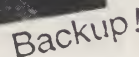
FIELD REPORTS

Editor tool, now this is my favorite module. It is a GOOD editor, it is easy to use



Some of the commands have been duplicated in two of the menus. however the commands that have been duplicated are useful in the selected mode,

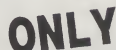
This is a very good product and it deserves a look as it is a very well thought out package, offering several utilities that are extremely well produced.



The products described here are not the only ones on the market for hard disk backup. But they are all good value for the particular aspects they address. Take the one that most conforms to your own special needs. Don't overestimate your own requirements, these packages are not expensive and you can always grow into a higher level utility. What is more important, is that you remember to backup every few minutes. Better safe than sorry!

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Printer of the Month

*As virtually all Amiga users either have or plan to acquire a printer, we are beginning a series which we examine a printer each month. The first is the **PANASONIC KX-P1180 9-PIN DOT MATRIX PRINTER***

A step up from its younger brother, the very popular and reasonably priced KX-P1081, Panasonic's KX-P1180 provides the usual choice between draft and near letter quality text. It comes with a standard Centronics parallel interface but an RS232 serial interface is available as an option. The printer has an internal standard 2K buffer to which an additional 32K buffer (for a total buffer size of 34K) can be added. Simple DIP-switch settings determine whether the printer emulates an Epson FX-86e/FX-800 (standard mode) or an IBM Proprinter II (IBM mode).

Draft characters consist of the usual 9 by 9 dots and standard near letter quality characters comprise of 18 by 18 dots (the exception is Sans Serif with 18 by 9 dots). Bit-image graphics can have a resolution of up to 240 dots per inch in quad density.

There is a selection of different fonts available: draft and near letter quality in Courier, Bold PS, Prestige and Sans Serif. Pitch sizes are the usual Pica (80 characters per 8 inch line) and Elite (96 characters per line) with several additions. Micron mode increases the number of characters per line to 120, Compressed increases them to 137 and Elite Compressed to 160. Pitch can also be expanded to cover just 40 characters per line and a proportional spacing option is also available.

The standard character set contains 96 ASCII characters while the IBM com-

patible set contains 158. In addition there are 31 international characters including French, Danish, Swedish, Norwegian, Latin American, Spanish and even Japanese though, for some reason, the UK version lacks German. If that's still not enough you can custom design and download up to 48 extra characters without the buffer option and up to 256 character with the buffer option in both draft and near letter quality. Available character styles include double height and double width printing, emphasized, overline and underline

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Prestige
!"#$%&'()*+,-./0123456789:;
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!"#$%&'()*+,-./0123456789:;
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!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
Bold PS
!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
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!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
Sans Serif
!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
!"#$%&'()*+,-./0123456789:;
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printing.

While draft and near letter quality printing is bidirectional, graphics are produced in only one direction. Printing speeds range from a very speedy 192 characters per second in draft down to 32 characters per second in near letter quality Pica. If you use your printer frequently and speed is of the essence, these speeds have something of an advantage over the KX-P1081 which only runs at 120 characters per second and 24 characters per second in draft and near letter quality respectively.

Loading paper is fairly problem-free. Friction and tractor feed capabilities are standard features so the printer can handle both continuous fanfold and single sheet paper. A paper guide and automatic paper feed make loading single sheets very easy. Continuous paper can be loaded from the rear or from the bottom of the printer. Sheets can be up to 31 mm thick; that's enough for an original document plus 3 carbon copies.

Two user-friendly features enhance the paper loading mechanism. A head gap lever allows you to adjust the distance between the printing head and platen to compensate for the thickness of the paper and the memo load feature allows you to use single sheets without removing the continuous paper. This saves a lot of fiddling about with your tractor feed mechanism when all you want to print out, say, is a one-off

FIELD REPORTS

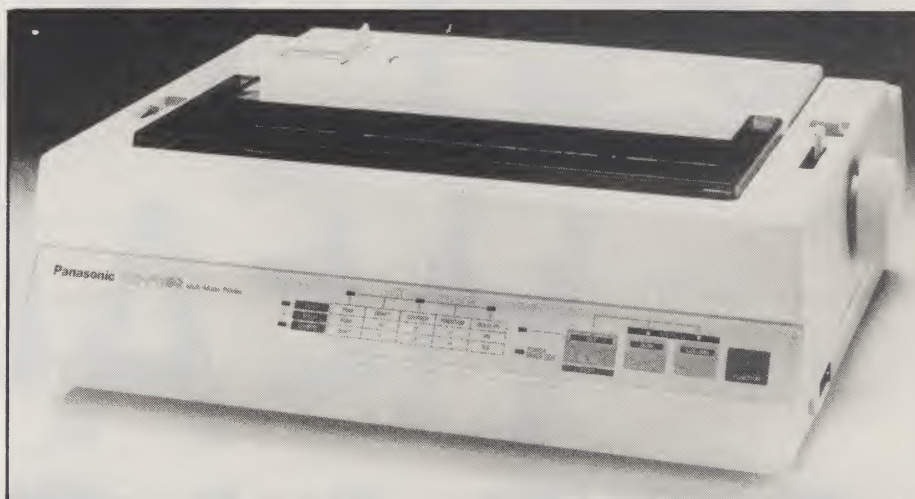
shopping list.

The ribbon comes in an easy-to-load cartridge and has an estimated lifetime of approximately 4 million characters in draft mode. The head itself should be good for 100 million draft characters.

With the exception of the DIP-switches and the on/off switch all the printer's controls are on the touch-sensitive panel at the front. Various combinations allow you to pick font and pitch or feed in the paper. These could be less confusing. It takes a little time to work out how the switches operate, especially as some of them have double functions, depending on whether the FUNCTION switch is pressed or not.

The DIP-switches themselves are somewhat awkward to get to, inside the printer near the printing head. Once you manage to locate them, they allow you to control functions such as skipping perforations, installing a cut sheet feeder or picking different character sets.

The KX-P1180 is a very competent all-rounder. It's fast, it prints near letter quality characters of a high standard and it has a very impressive range of options; the available selection of fonts and pitches should prove very useful if you need to use near letter quality print most of the time. It's not the quietest dot



matrix ever though a QUIET option does manage to cut down the noise a bit. It has all the features, such as superscript and subscript, double printing and so on, you could expect from a machine of this type and the software commands enable you to perform a wide range of tasks including tabulation, auto justification and page formatting plus all the front panel operations. Minor niggles include the awkward positioning of the DIP-switches and the slightly confusing front panel controls. For a total beginner, the manual might prove less than

straightforward. All the information is clearly illustrated by diagrams where necessary but the step-by-step instructions are not always as clear and informative as they could be. However, these are relatively insignificant points when you consider the variety of features the printer offers at a very reasonable price. If you are after an all-round printer packed with features and on a limited budget, you could do a lot worse than this.

K.H.

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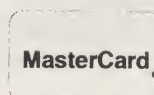
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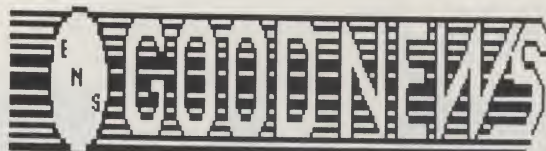
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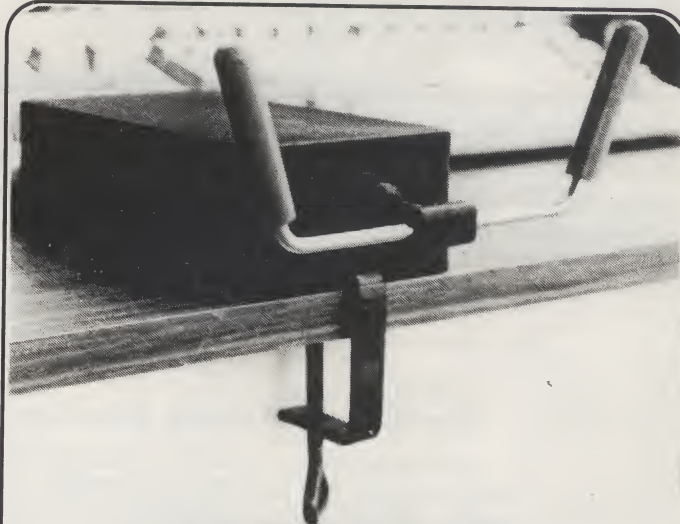
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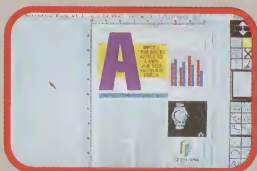
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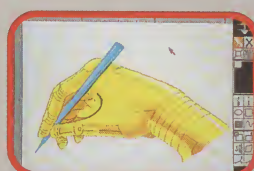
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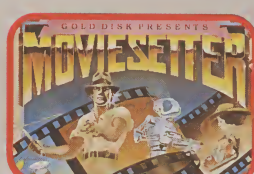
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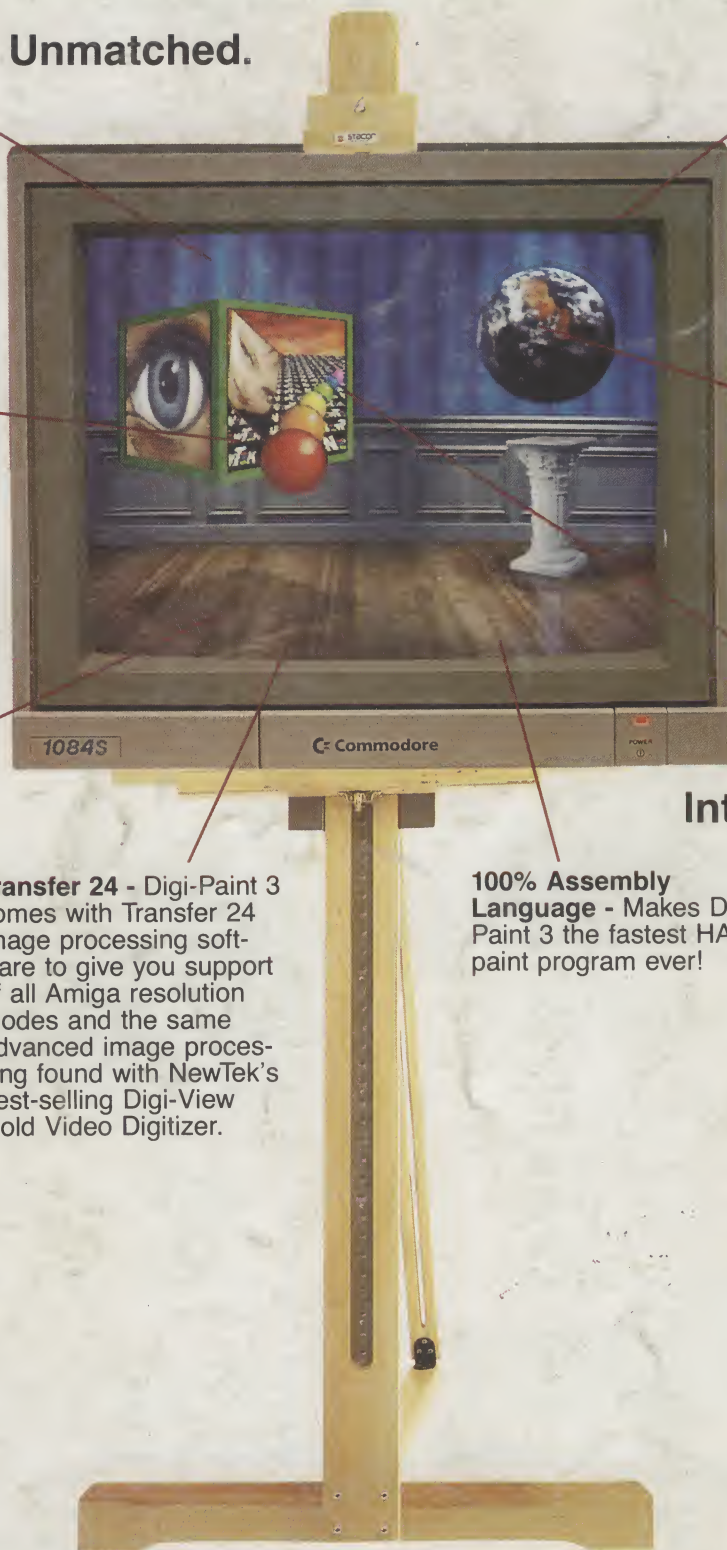
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